DOCUMENT RESUME

ED 204 913 EC 133 380

TITLE	Proceedings of the 1980 Institute for Public School Personnel Serving Visually Impaired Students (May 4-6, 1980).
INSTITUTION	Michigan State Dept. of Education, Lansing.
SPONS AGENCY	Office of Special Education (ED), Washington, D.C.
PUB DATE	May 80
NOTE	62p.
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Braille: Comparative Education: Computer Assisted Instruction: Educational Media: Elementary Secondary Education: Instructional Materials: Mainstreaming: Physical Disabilities: Science Instruction: Social Studies: Staff Development: *State Programs: Stress Variables: *Visual Impairments: Visually Handicapped Mobility
IDENTIFIERS	*Michigan

ABSTRACT

The proceedings of the 1980 Institute for Public School Personnel Serving Visually Impaired Students in Michigan contains the transcripts of 11 presentations. The introduction lists objectives of the institute including providing participants with information on the role of the Michigan School for the Blind, new instructional materials and programs, the availability of orientation and mobility specialists in Michigan, and the new Michigan Special Education rules. Papers have the following titles and authors: "An International Perspective" (D. Heiner, C. Rottman): "The Visually Impaired Child: A National Overview" (J. Scandary): "The Media Center" (J. Nicol, et al.): "Ohio Resource Center for the Visually Impaired" (J. Todd): "PATTERNS: The Primary Braille Reading Program" (H. Caton): "New Developments in Social Studies and Science Instructional Materials for Mainstreamed Visually Impaired Students" (G. Scholl): "Computer-Based Instruction in Graphic Skills for the Visually Impaired" (I. Macleod, J. Jackson): "The Commission for the Blind" (P. Peterson): "P.A.M. (Physically Impaired Association of Michigan) Assistance Centre" (A. Ensign): "Stress" (L. Brooks): and "Planning the Perfect Professional Development Program" (P. Vedovatti). Appendixes contain the evaluation report of the institute, 1980 priorities for public school personnel serving visually impaired persons in Michigan, and names and addresses of presenters and participants. (DB)

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PROCEEDINGS OF THE 1980 INSTITUTE FOR PUBLIC SCHOOL PERSONNEL SERVING VISUALLY IMPAIRED STUDENTS



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ACKNOWLEDGEMENTS

Many beautiful people contributed to the success of the 1980 Institute for Public School Personnel Serving Visually Impaired Students and the completion of this publication. We hope that the reader will find this compilation of proceedings from the Institute to be an invaluable reference and resource.

We, the Institute Coordinators, would like to express our appreciation to each of the one hundred eight (108) participants.

Our sincere gratitude goes to each presenter: Dr. Leonard Lee Brooks, Mrs. Lila Cabbil, Dr. Hilda Caton, Dr. Arselia Ensign, Mrs. Alecia Green, Mrs. Donna Heiner, Mr. J.J. Jackson, Dr. Iain Macleod, Ms. Julie Nicol, Mrs. Jean Orszag, Mr. Phil Peterson, Mrs. Carol Rottman, Dr. Jane Scandary, Dr. Geraldine Scholl and her students, Mrs. Julie Todd, Dr. Phil Vedovatti, and Mr. Charles Weir.

Also, we are deeply indebted to Thomas Johnston, Norman Huff, Linda Gingery, Walter Saumier, Teresa Thelen, Velma Doan, and the students of the Michigan School for the Blind.

Additionally, expressions of appreciation are in order for Mr. Murray Batten, Dr. Jan Baxter, Mr. Theodore Beck, Mrs. Katherine Bergin, Mr. Kevin Magin, and Ms. Sharon Pung Fink of the Special Education Services Area.

Finally, we would like to express our thanks to Judith Dorsch Backes who edited the manuscript and coordinated the compilation of this document.

Again, we thank you!

INSTITUTE COORDINATORS:

Dr. Nancy Bryant, Ph.D.

Dr. Deborah Livingston-White, Ed.D.

INTRODUCTION

Personnel serving visually impaired students have unique professional development and training needs. Due to the low incidence nature of the visual impairments, personnel serving blind and visually limited students serve relatively large geographic regions and tend to be rather isolated from their fellow professionals. The 1980 Institute for Public School Personnel Serving Visually Impaired Students was organized in response to the recognized need to establish communication among professionals. Further, there have been many developments in the area of educational materials designed specifically for instruction of visually impaired students over the past few years. Yet there is no real forum for public school professional personnel serving visually impaired students to come together to share and communicate about these developments or the use of these new materials.

During the 1979-80 school year, 1225 visually impaired and blind persons received Special Education programs and services in local and intermediate school districts and the Michigan School for the Blind.

Due to the least restrictive environment (L.R.E.) mandates of Public Law 94-142, an increasing number of visually impaired students are being served in local schools near their homes and have a need for specialized materials and equipment. In order to meet the needs of these students and their teachers, this kind of Institute program seemed appropriate for the sharing of information. More specifically, the program was conducted in response to requests submitted to the Special Education Services Area from practitioners in the field.

The purpose of the 1980 Institute for Public School Personnel Serving Visually Impaired Students was multifaceted. The Institute is one small step in assuring that visually impaired students in Michigan will continue to receive and benefit from the most appropriate educational programs and services. Such a program has the potential to facilitate the placement and maintenance of visually impaired students in the least restrictive environment. To be more specific, the Institute was designed to meet the following objectives:

1. To inform professional personnel serving visually impaired students of the development of the new Media Center for the Visually Impaired:
   a. to provide potential users of the Media Center with the opportunity to express their needs, and
   b. to provide guidance and direction to the Media Center staff;
2. To provide information on the new role of the Michigan School for the Blind:
   a. to describe how the state school fits into the continuum of services for visually impaired students residing in Michigan, and
   b. to share future plans for the state school;
3. To provide information to participants regarding new instructional materials and programs;
4. To provide an awareness of service agencies which provide services for, or information regarding, blind persons (e.g., Commission for the Blind, PAM Assistance Centre, Michigan State University Artificial Language Laboratory, International Institute for the Visually Impaired, 0 - 7, Inc., etc.);
5. To provide information on availability of Orientation and Mobility Specialists in Michigan;
6. To provide a preview and technical assistance regarding the new Michigan Special Education rules (P.A. 451);
7. To provide an awareness of trends in education for visually impaired persons on the local, state, national, and international levels; and
8. To collect information from the field which would be relevant for future statewide planning for visually impaired students and public school personnel serving these students.

C

The 1980 Institute for Public School Personnel Serving Visually Impaired Students was funded cooperatively by the Michigan Department of Education - Special Education Services Area with Part VI-B funds of Public Law 94-142 (Education for Handicapped Children's Act), the Michigan School for the Blind, and the Division for the Visually Handicapped of the Council for Exceptional Children (C.E.C.-D.V.H.). The Division for the Visually Handicapped sponsored Mr. Phil Vedovatti's participation in the Institute's activities. Dr. Nancy Bryant, Superintendent of the Michigan School for the Blind, and Dr. Deborah Livingston-White, Special Education Consultant for the Visually Impaired, served as co-planners and coordinators for the program.

CONTENTS

PAGE

ACKNOWLEDGEMENTS ii

INTRODUCTION iii

An International Perspective 1
Donna Heiner
Carol Rottman

The Visually Impaired Child: A National Overview 3
Jane Scandary

The Media Center 6
Julie Nicol
Alicia Green
Jeanne Orszag

Ohio Resource Center for the Visually Impaired 9
Julie Todd

PATTERNS: The Primary Braille Reading Program 12
Hilda Caton

New Developments in Social Studies and Science Instructional Materials for Mainstreamed Visually Impaired Students 16
Geraldine Scholl

Computer-Based Instruction in Graphic Skills for the Visually Impaired 19
Iain D.G. Macleod
J.J. Jackson

The Commission for the Blind 28
Philip Peterson

P.A.M. Assistance Centre 30
Arselia Ensign

Stress 32
Leonard Lee Brooks

Planning the Perfect Professional Development Program 37
Phil Vedovatti

APPENDIX A: Evaluations 41
Inservice Evaluation Report 42
1980 Priorities for Public School Personnel Serving Visually-Impaired Persons in Michigan 43

APPENDIX B: Presenters and Participants 45

AN INTERNATIONAL PERSPECTIVE

Donna Heiner
Carol Rottman
International Institute for the Visually Impaired, 0-7, Inc.

We are the children of the earth.
Our family is spread
over the whole earth
and across all time...

Each of us is related
to all beings
and all things. . .
and we are everything that is.

- Laurie Kohl

We are here today because we are concerned, as educators and as caring individuals, about improving services to visually impaired children in Michigan.

The number of children we teach are small. They are, at the same time, part of an even larger group. Throughout the world are countless visually impaired children. A few of these children received intervention at an early age - they spent their first years learning the skills necessary for them to function competently and independently, attend school with sighted peers, and look forward to their adult years. A larger number of these children did not receive special attention and need not have been blind at all - they were blinded by poverty, ignorance, or malnutrition; they have little chance of achieving fulfilling, independent adulthood. These, too, are our children.

Physical handicaps, blindness included, are not bounded by geography, race, or politics, Countries are now aware of the existence of large numbers of handicapped children and adults. Interest in the welfare of the handicapped exists worldwide. What does not exist are adequate programs. No nation, not even the United States, is identifying and serving all of its handicapped.

Although each nation has unique social and economic characteristics, the problems each must face in the area of special education are similar. Identification of children, early intervention, parent involvement, legal rights, appropriate placement, and employment of the handicapped are concerns not limited to the United States. In each country, the quality of those provisions, however, is closely related to the prosperity of that country and to the level of service (educational, medical, etc.) available to all its children.

During the last 50 years, the United States has become a leader in special education. Our research is unequalled by any other nation. We have large numbers of trained professionals in education and in related fields. Our abundant economic resources have made possible the development of many innovative techniques. Adaptations and translations of our assessments are in use throughout the world. Our publications in the field of special education are on bookshelves of bookstores, universities, and private libraries in numerous countries.

We have much knowledge to share with the rest of the world. We also have much to learn. Europe was the home of those who first began to study and teach children who deviated from the norm. There, special education has continued to develop. The article you received at this conference delineates many of these developments. There is a need to share ideas among nations and among the different disciplines in those nations. Many of these ideas can be modified for use with our children.

A significant international trend is the prevention of disablement by intervention at an early age. Nowhere is this more evident than in the field of visual impairment. The loss of a major sense, vision, affects the young blind child in all areas of development. During the first weeks of life, the child's relationship with caregivers is hindered by the lack of vision. The child must be taught to learn through remaining senses and, if some sight is present, to use that sight to the fullest extent possible.

To be effective, intervention must be early and specific. In the U.S., recognition of this fact for all disabilities has resulted in a number of pre-school programs which seek to provide this intervention. The very young blind child presents a dilemma to educators. When the first federal intervention programs were funded, there was little shared knowledge about the young visually impaired child and even less appropriate material for parents and teachers. The last few years have seen a proliferation of resources - assessments, *The Guide* and *The OR Project*; newsletters, *National Newspatch*; and publication of research findings, Selma Fraiberg's *Insights from the Blind* and David Warren's *Blindness and Early Childhood Development*.

There is still a great deal we need to understand concerning the learning processes of both partially sighted and blind children. We must direct our focus to early childhood education, to pre-learning skills. In order to do this, we must move from the classroom to the home; from academic subject areas to self-help and psychomotor skills.

The International Institute for Visually Impaired, 0-7, Inc. was incorporated in October, 1978. Until that time, there existed no institute or organization, national or international, devoted exclusively to study, research, and dissemination of information relative to the development of visually impaired infants and young children.

Our major purpose is to aid parents and teachers of the very young blind child. Our staff, originators, teachers, and curriculum consultants for a world-renowned BEH Demonstration Project for the preschool blind child, possesses unique skills and resources. We want to share the results of our experiences, material gathering, and communication with educators of the blind all over the world. We want to start here at home.

Michigan is an appropriate location for such an Institute. Many states to which we travel have permissive legislation until age 5. They see the need, but must fight major battles in order to establish and pay for the needed programs. *Our* legislation is clear: we are to focus on children from birth on. Michigan has so much "in place" for success for visually impaired, yet the quality of service available to parents and children is not uniform. We can start right here at home by concerning ourselves with the welfare of children in neighboring counties. Our goal should be to find each visually impaired child soon after birth, plan carefully for his/her development, and give the child's parents the encouragement and confidence to be his/her life-long teachers.

In conclusion, we'd like to share with you a quotation which has become an expression of our beliefs:

****

Many of the things we need can wait. The child cannot. Right now is the time his bones are being formed, his blood is being made, and his senses are being developed.

To him we cannot answer "tomorrow."
His name is TODAY.

Gabrila Mestral, Poet
Nobel Prize Winner, Chile

THE VISUALLY IMPAIRED CHILD

- A National Overview -

Jane Scandary, Consultant
Special Education Services Area

The national picture of what's happening in the field of education for the visually handicapped can be described only as "bleak, yet promising" at the present time.

Although great strides appear to have been made in breaking up the educational isolation of this group of handicapped children, the resulting special education programs and services provided to this group of handicapped individuals leaves much to be desired.

State and federal legislation have mandated that the public schools shall provide a free, appropriate, public education to all handicapped children within the 3-21 age group. Further, they have mandated that this free, appropriate, public education be provided in the the most enabling environment (Least Restrictive Environment) and as close to the child's place of residence as possible. All educationally appropriate, related, and supportive services deemed necessary to meet the unique needs of a handicaped child, in order for him to benefit from "specialized instruction" in this "most enabling environment," are also mandated to be provided.

Taken as a whole, this is pretty heavy stuff - and particularly for persons who have been identified as having handicaps which fit into the low-incidence population (i.e., a low percentage of a particular handicapping condition within a normal population). Historically, this group of handicapped persons has been educated in isolated educational settings operated by local, state, or private agencies. Overtly, the rationale for this educational isolation has always been one of economics. Covertly, society has never liked to acknowledge that it didn't relish the idea of learning how to live and cope with this group of handicapped persons.

Beginning with the Brown decision that " 'Separate but equal' is not equal," and cluminating in the Education for All Handicapped Children's Act, known as Public Law 94-142, society can no longer ignore the educational or life needs of this low-incidence handicapped population. However, as with all things, mandates to provide do not ensure that appropriate provisions shall be made - unless there are procedures for monitoring and compliance, and persons who care enough to ensure that the provisions necessary for each individual child, in accord with his/her unique needs, are met.

Legislation has provided for procedures by which monitoring and compliance of the laws may be carried out. It has also provided means by which parents may advocate for their child through the due process provisions of the law. These due process rights are founded on the premise that parents know what is best educationally for their child. This may or may not be a false premise. Parents know what *they want* for their child, but they may or may not know what is best educationally for them. It is incumbent upon an educator, knowledgeable in the area of the handicapping condition, its impact on the growth, development, and learning of the child, and the science and art of pedagogy, to transform and translate the parental and societal goals into the appropriate educational plan for the child. And therein lies the dilemma! - particularly for the visually impaired school child within this culture.

Legislation has mandated a more enabling enviornment than what has been available previously to the visually impaired child. Parents have been given the right to assist in the development of an appropriate educational plan for their child. Administrators have been mandated to provide the personnel, facilities, materials, and equipment to facilitate this individualized education plan - but it does not appear to be happening in either the nature or degree as was the intent of the legislation.

Perhaps if we examine some of the interesting facts surrounding the education of the visually impaired, we might be able to understand why there appears to be a gap in the implementation of the legislation dealing with the education of visually handicapped children.

1. **The old "State School for the Blind," as an educational facility for all blind and visually impaired children within a state, is an institution of the past.**

The concept of programming for a child in the "least restrictive environment" and "in as normal a peer setting as is possible and appropriate" has changed the numbers and nature of the children now seeking placement in such institutions. These state schools are rapidly becoming educational centers for those children whose needs cannot be met in any appropriate manner in a regular school or within a local school district. Programming within these state schools no longer is developed for or focuses on the "nice, neat, blind or visually impaired child" that composed the population of these schools in the past.

2. **Programs for the visually impaired are being established in the larger population centers throughout the state.**

Where sufficient population warrants, programs for the visually impaired are being developed closer to the residence of the child. And, in some cases, there is even a continuum of services available for the visually impaired children within their home school districts. By a "continuum," I mean "appropriate options for service" ranging from the self-contained classroom to total integration within the regular classroom with a full range of appropriate support services."

It should be mentioned that, although there is an increase in local program development, the coverage throughout the state in this program development is still spotty. This is also true, to an even greater extent, in the provision of all related and supportive services necessary to the success of the integrated, visually impaired child.

3. **More visually impaired children are being "educated" within the public schools of their home communities.**

It stands to follow that if the state schools have changed their focus and clientele, and there has been an increase in local program development, more visually impaired children are receiving more educational services from their local or intermediate school districts. This is supported by the increase in the numbers of Teacher Consultant positions opened by local school districts and the increasing needs for central media and material centers which are being designed to meet the material and equipment needs of the visually impaired within these settings.

Despite these "facts" that seem to indicate that all is going well in the provision of educational programs and services for the visually impaired, there are some other kinds of "facts" that would appear to throw a different light upon this optimistic story.

1. **The recorded incidence of visual impairment in the general population (medical and American Printing House quota reports) is increasing.**

State and national Child-Find projects, medical services, and social service agencies dealing with infant and young children are identifying more visually handicapped children, earlier in life, than previously. In a recent national survey done by Dr. Geraldine Scholl and Ms. Marianne Vaughn for the Institute for State Education Consultants for the Visually Impaired, there were only seven states where the APH Quota count and the listed number of visually handicapped students served by Special Education within that state showed little or no difference.

2. **The recorded incidence of visually impaired children being identified as handicapped and served by special education programs and services is decreasing.**

According to the survey mentioned above, a majority of the states (31) report losses in the count of the number of visually impaired students under P.L. 94-142 and 89-313. These losses are often significant; from one-third to one-half in 1978-79 compared to 1975-76. The most recent figures released by the Michigan Department of Education relative to child count indicates that in 1977-78 there were 1,336 students identified as visually impaired within the State of Michigan. As of the most recent count (April 10, 1980), there were 1,225 visually impaired students for the 1979-80 school year - a difference of 111 students. One must wonder, given the information stated above, where have all the visually impaired children gone - and, even more, where are they going? One must also wonder whether they are being caught in the same situation as those poor spellers who are determined to spell "relief" with the letters "R-O-L-A-I-D-S." In the case of the visually impaired, is it possible that the word "appropriate" is being spelled "A-V-A-I-L-A-B-L-E?" Are these children being misidentified in order that they may be misplaced in "available" rather than appropriate programs?

3. **There is no nationally recognized advocacy group which can speak for or represent the causes of the visually impaired, school-age child.**

Although there have been more federal monies designated toward the education of the visually impaired, over a longer period of time, through support for the American Foundation for the Blind, the American Printing House for the Blind, and the Congressional Library for the Blind, than almost any other single handicapping condition, these agencies have never served or seen themselves as advocacy organzations for the population they serve.

State Departments of Special Educaion are fast approaching the time when categorical consulting, planning, assistance, and advocacy for a particular handicapped group will no longer be a viable function of that agency. State and federal legislation mandating monitoring and compliance activities from this agency will demand that all time, effort, and personnel of that agency be devoted to these mandates rather than serving in the advocacy or quasi-advocacy functions of the consultant position of the past.

A brief summary of these statements seems to indicate that although the state school of the past is not now the most appropriate educational placement for a large number of visually impaired students, and although there is an increase in local program development for these students, there are still gaps in the delivery of services to this low-incidence, handicapped population - and that one of the methods of filling this gap appears to be through inappropriate identification and programming. Further, it would appear that there is no one organization to serve as "speaker" or "advocate" for this group of children on either a state or national level.

Given this information - what can be done about the plight of the visually impaired student? I think that the time has come to develop a new advocacy group composed of yourselves - teachers and other professionals working with and involved in the education of the visually impaired child. This, in turn, calls for a new role and responsibility for *you* as teacher. Let us look, for a few brief minutes, at the role of "advocate" and some of the activities that a teacher as advocate might be able to do.

An advocate is a person who is in a position to overtly or covertly protect, support, and argue the interests and welfare of someone else. The role and function of the teacher as an advocate is not a new one, but it has never been addressed specifically as such. In the selection of a career as a teacher, there is an inherent factor of interest and concern for the educational welfare of children. It is not required that a teacher *love* children as a prerequisite to entrance into the profession. It is required that teachers *care about* the children for whom they have responsibility.

The teacher has or develops concerns about the importance of learning, and the right and necessity for children to learn certain things in order to be able to function effectively within their environments. The teacher of handicapped children has even greater need to see/recognize this role and function as a constant and continuing part of their professional and personal responsibilities.

Some of the ways in which a teacher may serve as an advocate are as follows:

1) It is incumbent upon the teacher to be knowledgeable about the rules and regulations encompassed within the federal and state laws governing the education of the handicapped in order to (a) protect the child's right to the teacher's service, (b) protect the teacher's right to provide appropriate services to the child, and (c) protect the teacher's right and responsibility to inform the parents and child of their rights included within these legislative acts for their understanding and use.

2) Active membership in local, state, and national teacher associations for the purpose of initiating, reviewing, recommending, and supporting organizational actions which would have a positive impact upon the handicapped children within the employing school district. It is also incumbent upon the special education teacher to serve as a countervailing force within the organization relative to policies and actions which might impact negatively upon the educational rights and provisions of handicapped students within that school district.

3) Active participation in a local, state, or national community organization which has, as one of its major goals, service to a specific group of handicapped persons. Frequently, special community projects and support for an individual or groups of handicapped persons within a community can be addressed more quickly and efficiently through such organizations than through institutional agencies. Keeping such a community organization informed of the community needs of handicapped persons within that community could be a major advocacy role of the teacher member.

4) Knowledge of and contact with the various local and state organizations which focus on specific handicapping conditions, the kinds of services that they provide, and how to tap these agencies for service. This repertoire of information should be made available to parents of specific handicapped children for the support, information, and resources which these organizations may be able to provide to their consumer groups.

5) Individual school and community activities in which a teacher may serve in an advocacy role are many and varied - ranging from writing articles to newspapers relative to specific issues dealing with the handicapped within a community and/or speaking on behalf of the handicapped or handicap need at a community function, to a consistent accepting attitude and behavior that bespeaks of a respect for individual differences in any form.

6) The teaching of the handicapped to assert themselves is a major function and responsibility of the teacher. The methods and means by which the handicapped individual can be taught - or teach himself - to relate to his peers and others, accomplish normal or adaptive learning tasks, and cope with his disabilities within and outside the educational environment will serve, in and of itself, as a support and argument for the causes of the handicapped. The teacher has the primary responsibility, as a facilitating agent, to ensure that this independent growth and development takes place. It is the role and function of the teacher of a handicapped person to provide the necessary guidance and direction, enabling environment, and the appropriate resources which will encourage and ensure maximum growth of the handicapped person to assert himself as an individual and to be an advocate for himself and his peers.

This list of teacher-advocacy activities is by no means complete - but rather perceived to be elementary or beginning advocacy activities for all teachers of handicapped children; and, in particular, essential for those teachers of low-incidence handicapped who, at this point in time, have no one else to serve in this capacity.

It behooves all of us who are concerned about and working with these children to accept the challenge of advocacy, both within and outside our educational responsibilities. You, as teachers of these children, have the potential of becoming an organized force through which appropriate programs and services may be planned and developed for the visually impaired children within the State of Michigan. Once begun, this force could gain strength through national association and, hopefully, have national impact relative to the children of our concern. May I urge you to accept the challenge of Teacher as Advocate now. Our children can't wait - for each day they grow - and "to wait is to neglect."

THE MEDIA CENTER

Library for the Blind and Physically Handicapped: Background

Julie Nicol, Director

The purpose of this presentation is to review and update teachers on library services for the blind and physically handicapped offered by the Media Center. The services of the Media Center can have an impact on teachers, their students, and their futures.

The Media Center is located at the State Library. It is a part of the Department of Education within the State Library and has been very active in the outreach to schools and special projects to schools. As a result of mandatory education for the handicapped, more and more people have become familiar with the services of the State Library. Regional libraries with similar services are available throughout the country. These services are free and used by the visually impaired and blind as well as a large group of physically handicapped people who cannot use print; whether it's because they cannot hold a book, cannot turn pages, or they don't have the motor ability to follow a line of print. Non-readers and the learning disabled fall into this category, too, because many of the students and adults cannot deal with print.

The Blind and Physically Handicapped Library is one important link in a network of regional and subregional libraries throughout the United States established through federal legislation to serve the blind and physically handicapped of this country. The primary purpose and responsibility of this network of libraries is to provide free reading materials to those who, because of physical limitations, cannot use normal print. In addition to blindness and physical handicaps, limitations include any disability that prohibits the holding of a book or turning of pages (i.e., muscular dystrophy, cerebral palsy, or severe stages of arthritis). A person with a reading disability resulting from an organic dysfunction is also eligible for these services.

Federal legislation has been important not only in creating this unique service, but also in striving continually to improve it. In 1931, federal legislation allowed for Braille materials to be made available to all blind adults. Talking Book service was extended to blind adults in 1934. In 1952, the service was enlarged to include school-aged children. Then, in 1966, these services were expanded further to include all handicapped persons who cannot read normal print because of physical limitations. Certification by a competent authority is all that is required to receive service. Services can be provided to the individuals in their homes or in the name of an institution such as a school, retirement center, or library. Reading materials consist of Braille, large print, books recorded either on disc or cassette tapes. The library in Lansing has a total holding of over 25,000 titles. This consists of almost a quarter of a million volumes, containers, cassettes, and reels of materials.

The Blind and Physically Handicapped Library is adding to its cassette collection by having volunteers record special collections of materials. Disc books are recorded at eight revolutions per minute; cassette titles are recorded at a speed of 1⅞ inches per second. These are non-commercial speeds so these materials cannot be played on commercial records or cassette players to patrons. Playback machines are loaned – free of charge. The record players and cassette machines have been designed specifically for easy use. They are also repaired and serviced, free of charge, at the State Library in Lansing, at one of several repair stations by the Telephone Pioneers or Lions Clubs, or by other voluteers around the state. The services of these workers has been invaluable in helping to keep these machines in working order.

In addition to providing the same type of reference and research services found in every public library, the Blind and Physically Handicapped Library assists its patrons in locating books, articles, and other materials not found in its regular collection. If a requested title is not available in useable form, an extensive search is conducted by the staff to determine if the title is available from any other source, If so, it is ordered. If not, the library is fortunate to have volunteers who will record, onto tape, any book that is not available. Readers record in their own homes. Workshops are held periodically to instruct them in proper recording.

Also, the State Library works in close cooperation with the various Braille transcribing groups and individuals around the state in providing Brailled materals to those patrons who need their books and articles in that reading form. Those who need books put into large print are referred to the Michigan School for the Blind in Lansing for that service. Ninety-nine per cent of the circulation is done through the mail, free of charge.

To assist patrons in selecting the books they wish to read, catalogs and bibliographies are available. Also, periodicals, talking-book topics, and Braille book reviews are available directly to each patron. These publications contain articles of general interest to the blind and handicapped as well as list the new Braille and recorded books received by the library. As an added convenience, a toll-free telephone (1-800-292-2525) has been installed in the State Library. A message-taking device records calls 24 hours a day, seven days a week.*

A weekend institute ("The Think Tank." 1975) resulted in the awareness of the need for a central clearing house for materials for the blind and visually impaired. Funding for this project was begun through the Michigan Department of Education, Special Education Service Area in 1979. A survey conducted around the state indicated that school personnel were duplicating Braille and taped materials that were available through the State Library. As these are time-consuming activities, it was important to centralize and inform the schools how to gain access to the materials. A compilation of catalogs, which lists materials that are held in the schools, is completed and disseminated annually. The last two years this compilation has been on microfische. This catalog lists, for school personnel, in alphabetical order by title, books that are located in schools around Michigan and which may be borrowed for students' requested materials.

* (End of film presentation)

The Media Center is truly a cooperative venture, as many things are in the area of service to the handicapped population. Special Education is providing the funds, the School for the Blind is providing the facilities, and ease of access has been accomplished by transferring two main offices, formerly at MSB, into the central office of the Media Center. Ultimately, about half of the library building will be used for offices and the collection. In addition, the Instructional Materials Development Center, that has been located on the MSB campus (and still is), will be dealt with administratively through the Media Center, instead of the School for the Blind. Thus, Bob Doty's operation, which has provided such services as enlarging print, duplicating through thermoform Braille, and laminating, will be operated under the Media Center. There has also been a merging of collections to include the textbook materials held at the School for the Blind. This merging of the Library for the Blind and Physically Handicapped educational collection will be the core of the collection. The Media Center will then be going out to the field to ask school districts and school personnel to give to the collection those materials that are not being used currently, such as Braille books, tapes, and equipment.

The Federal Quota Office will also be transferred administratively to the Media Center over a two-year transitional period. Eventually, the Media Center will be involved with registration and hopes that, through a little bit of expansion with the registration process, they will be able to gain information on kids so that the Center can help teachers follow the child through school and make contact with that child or with the child's teachers in terms of the next year's needs. The Center expects to use some Federal Quota money to purchase a large supply of materials that are most often requested.

The Media Center produces about 600 titles annually, based on needs in the field, and two-thirds (⅔) of the funds go to educational needs.

The Media Center has about 4,000 cassette titles in a master collection that are used to duplicate copies to circulate. These are obtained from the Library of Congress. In addition, the Center has another 4,000 titles that volunteers have produced over the years to meet needs. With the expanded facility, it is hoped that the Center can continue to expand the volunteer services that it has been able to provide. We have about 80 recorders and narrators that record in their homes. In addition, the Center has been working, over the last couple of years, again with the School for the Blind, in trying to get a core of Braille transcribers that work directly with the library. With the additional space, the Center will be able to bring volunteers in-house to do production of materials. In the long run, the shining light is that, perhaps, we can have some recording studios that will have an impact on all of this even more. That is one of the goals of the Media Center.

THE MEDIA CENTER FOR THE VISUALLY IMPAIRED

Alicia Green, Director

The creation of the Media Center for the Visually Impaired is a promising fact, with the understanding that the equipment and textbooks for the visually impaired are going to be available at the appropriate time. It will take educators to work on a close timetable and an open dialogue for the Media Center to become at least part of the solution to the many problems in the field of education of the visually impaired. Technological advances, too, are a great boon to our educational tasks.

The Media Center hopes to provide fast and efficient services to every educator of visually impaired students in the state. The old recommendation, "Plan ahead," does not always work in these progressive times. Our children change residence, and schools, during the summer. Thus, September has become a "Pandora's Box" for the teacher! Increased family mobility has tremendous implications for educational planning.

The idea of a centralized place to focus on the acquisition, circulation, and storage of educational materials became a reality with the collaboration of three state agencies: Michigan State Library, Michigan School for the Blind, and Special Education Services Area of the Michigan Department of Education.

The Media Center for the Visually Impaired is a resource center with (1) a *Depository Collection* of textbooks in special format and education materials, (2) a *Reproduction Center* with equipment to enlarge regular print, to reproduce Braille masters through thermoforming, and, with printing presses with the capability to provide inservice printing to schools and professionals, and (3) an *Inhouse APH' Store* with an inventory of "most-used items" by students and schools. We have already ordered the equivalent to $20,000 in equipment and supplies which will be mailed, upon request, from Lansing instead of Louisville, Kentucky. The store should significantly reduce the time required to fill orders.

The Initial Tasks of the Media Center

The initial tasks of the Media Center include the following:

1. *To consolidate the educational and textbook collections*, with the adaptation and expansion of the existing Library for the Blind and Physically Handicapped automated circulation system. We hope to expand access and diffusion of the collection, thus facilitating interloan of existing materials and avoiding duplication. Also, we plan to organize an acquisition system that will meet to the needs of all students involved.

2. *Reproduction Facilities:* The Instructional Materials Development Center, under the direction of Robert Doty, has been providing large-print photo reproduction services for over a decade. By the end of this first year, we will add a cassette and open-reel duplication unit to provide more complete service to the field.

3. *Volunteer Production:* The Library for the Blind and Physically Handicapped, through its Special Services Unit, has coordinated the volunteer production of textbook materials. With the assistance of Michigan School for the Blind, a Braille transcribing class is being offered for the second year. In the near future, a local Braille transcribing group will be working directly with the Media Center, and in-house materials production will be increased.

Federal Quota Fund Administration

To date, Dr. Nancy J. Bryant, Superntendent of the Michigan School for the Blind, has been the ex-officio trustee to the American Printing House for the State of Michigan. The School for the Blind has centralized the annual registration of visually impaired children in the state. The Media Center will take over this responsibility and Michigan School for the Blind personnel will act as advisors during the transfer of activities. The Federal Quota Fund is, perhaps, the most important source of educational resources for our students. Jeanne Orszag, Librarian, handles the details of the quota program. The Media Center has a team of five dedicated professionals, but teachers' participation is vital to complete the process. We need you to share your concerns and suggestions.

FEDERAL QUOTA FUNDING PROGRAM

Jeanne Orszag, Librarian

The registration forms for Federal Quota are sent out during Christmas vacation each year. These forms are sent to Special Education Directors at the Intermediate School Districts. The forms are due back to the Media Center by February 1st. The Media Center must retype the information from these forms in a different format before students are certified with the American Printing House (A.P.H.). March 1st is the deadline for filing with A.P.H.

Students who are registered in January are not eligible, legally, for materials until the first of October. However, if a teacher has a class or a student who needs materials, requests can be made with Federal Quota funds. There is no reason for a student to be sitting in a classroom without materials just because he came in late after registration. Please keep that in mind!

There is a continuing need for dedicated volunteers to serve as repair persons, readers, and Braillists. Interested persons may contact the Media Center for referral to the appropriate organizations.

OHIO RESOURCE CENTER FOR THE VISUALLY HANDICAPPED

Julie Todd, Coordinator

As persons concerned with educating visually impaired students, we are challenged by five major issues:

1) delivery of specialized equipment and materials;
2) inservice;
3) dissemination of information about the latest technology, research findings, and parent concerns;
4) identification; and
5) making others aware of what special education has to offer not only to students, but also to the school system and to the community.

Our goal as educators is to find a delivery system that addresses these issues. If we do not, we are just serving students and not providing special education. Special education involves more than placement of a student in a classroom; it means programming based upon current practices by teachers who are knowledgeable about visually impaired students and their unique needs.

Educators must examine available resources in order to determine the best method of achieving their goals for the special education of visually impaired students. Ohio has tried several different approaches. Initially, a consultant at the Division of Special Education was responsible for administering Federal Quota funds, thereby delivering materials and equipment to students. Next, a project was established at the Residential School for the Blind. Personnel were responsible for the expenditure of Federal Quota funds and for maintaining an inventory of materials. Both of these methods dealt only with materials and equipment and were not always efficient. Serious issues, such as inservice, awareness, and information dissemination, were not being addressed.

A decision was made to initiate a new delivery system. The project would be designed specifically to meet the needs of visually impaired students, their parents, and educators throughout the state. Funded by the Ohio Department of Education, Division of Special Education, with Title VI-B monies, the Ohio Resource Center for the Visually Handicapped has the following goals:

- provide inservice;
- maintain a collection of instructional materials, equipment, and professional literature;
- maintain a collection of large print and Braille textbooks to loan to school districts for use with visually impaired students;
- assist the Division of Special Education in administering Federal Quota funds;
- work with the regional Special Education Resource Centers to provide information and inservice;
- assist the Division of Special Education in the identification of legally blind students; and
- disseminate information to parents and educators.

A needs assessment indicated several areas of concern:

Materials:

- Federal Quota Funds were not being spent in the most effective manner; Braille, large-print books, and equipment were being used once, then collected dust on a shelf.

Volunteers:

Approximately 250 volunteers throughout the state were brailling, taping, and/or large-type transcribing for visually impaired students. They were not communicating with each other. There were volunteers in some parts of the state that had too much to do; volunteers in other parts of the state had absolutely nothing to do and wanted to work. We also didn't have enough volunteers in the state producing large type.

Teachers of the Visually Impaired:

Teachers of the visually impaired had several concerns: 1) they felt very isolated, 2) they felt out of touch with what was going on in the field, and 3) they had a desire to help regular educators working with visually impaired students.

Regular Education:

Regular education teachers, administrators, and support personnel wanted to serve the visually impaired students, but they often were not sure how to get into the system. They did not even know what the whole system had to offer them and their students.

Specific strategies were designed to address the issues mentioned above through:

- inservice
- information dissemination
- product development.

Following is an explanation of the types of activities implemented by the Ohio Resource Center for the Visually Handicapped:

Inservice:

Regular meetings for teachers of visually impaired are held twice a year and give teachers an opportunity to exchange knowledge, ideas, and techniques.

A statwide meeting is held annually. Parents, volunteers, and regular education teachers are involved. Speakers are chosen based upon the topics highly rated on the needs assessment. A film theatre and exhibits by publishers, agencies, representatives, and equipment manufacturers are also part of this meeting. Ohio has found the annual meeting to be very well received.

Highly specialized inservice is also provided for educators and parents. Project PAVE, a project out of the University of Texas, came into Ohio last summer and gave a week-long inservice. A week-long training session of teachers on Chisanbop was also held. Optacon training is held at two universities during the summer, and last year the Center provided an Optacon Update Workshop for teachers who had already been trained in the Optacon and have been using it for at least two years. This gave them an opportunity to talk with a representative from Telesensory about some of the new developments and instructional methods to be used with the Optacon. The teachers have requested that the Center do this annually.

The Center supports teachers of the visually impaired in any inservice that they want to provide in their districts. The teacher notifies the Center about the kinds of materials they need (i.e., films, pamphlets), and the materials are sent on loan at no cost. The Center will also help the teacher plan the inservice if assistance is needed.

In addition to doing inservice for teachers of the visually impaired, the Center also holds meetings for regular education teachers, administrators, supervisory people - anyone who needs inservice training about the unique needs of visually impaired students. The topics and the target groups are based upon the results of the needs assessment and/or requests. The meetings are held either on a local level or regional level.

The Center also sponsors an annual meeting for the agency people who work with visually impaired students.

In the fall, we will sponsor four regional workshops for school psychologists. The workshop is based on the model that AFB is using in their six national workshops. The Center staff also meets with supervisory people on assessment and programming for visually impaired students and what resources are available.

One of the most requested workshops the Center holds is for the regular teacher on how to work with visually impaired students in the classroom. The Center has developed products to help those regular classroom teachers.

Information Dissemination:

Information dissemination is probably one of the most challenging areas addressed by the Center. The mailing list consists of parents, teachers of visually impaired, administrators of the programs for the visually impaired, regular education teachers, administrators, and support persons working with visually impaired students.

The newsletter is published three or four times a year and contains a variety of information including inservice notices, news about new products, research findings - anything that might be of interest to teachers and parents of the visually impaired. A reply sheet gives people an opportunity to check off the kinds of information they want to receive from the Center. The newsletter also tries to solicit new ideas and information that teachers want to exchange with each other.

We do special mailings for different organizations such as convention notices for the Ohio chapters of AAWB, AEVH, DVH, and the Athletic Association for the Blind.

Our film library has 40 films that are availble for use in inservice. Most of the films are purchased on teacher recommendation.

The parent/professional library has over 700 titles. These are books that have been written for parents of visually impaired children or for teachers who are teaching visually impaired children.

The Center has a number of free materials, such as the Society to Prevent Blindness brochures and some of the AFB brochures. Any time the Center collects information that it feels will be of use to teachers, multiple copies are run and "advertised" in the newsletter.

Large Print/Braille/Specialized Equipment:

All orders for Braille and large-print books, as well as the specialized equipment available from the American Printing House (APH), come through the Center. The Center checks the inventory to determine whether or not a particular book or material or piece of equipment is already in the state. If it is, the item will be mailed or an inter-district loan will be arranged. If it is not available in the state, but can be purchased from APH with Federal Quota funds, the orders are forwarded to APH. A Braille title that is not available from APH, but is available some place else in the United States, will be obtained whenever possible.

Approximately 22 percent of the 3600 requests that the Center receives each year can be handled with materials that are already in the state. As a result of making better use of materials that are already in the state, Ohio has been able to make more efficient use of Federal Quota Funds.

The Center promotes volunteer groups by providing supplies such asbinders and spines, braillewriters, and Braille paper. The Center will duplicate and store masters. Braillewriters and thermoform machines are repaired by volunteers who belong to the Telephone Pioneers organization.

Product Development:

As a result of concerns expressed by regular education people working with visually impaired students, the Center decided to design and produce resources on how to work with visually impaired students.

We called together a group of regular teachers, special teachers, and administrators to start the development of a filmstrip-cassette program for regular teachers. After much work, the group produced two programs. The first program was approximately 10 minutes long. The purpose of this first filmstrip is to acquaint administrators with characteristics of visually impaired children and to familiarize them with the available resources. The second program is 25 minutes long and gives detailed instructions about orientation, teaching techniques, and specialized equipment.

A resource book was developed to accompany the filmstrips.[1] This resource book, along with the filmstrip, is a multimedia inservice for regular teachers who work with visually impaired students in their classrooms.

A list of state and national resources was compiled. The booklet is brief and is updated every quarterly.

A flyer for optometrists and ophthalmologists was developed. The flyer explains the public school services that are available for visually impaired students.

Ohio has found that the Ohio Resource Center for the Visually Handicapped is an effective delivery system for assisting parents and teachers in working with visually impaired students to achieve their maximum potential.

[1] This resource book was designed around the types of questions that regular teachers ask: "Do I Have to Rearrange My Classroom?" "Are Special Materials Needed?" "Do I Have to Change the Way I Teach?" "Will a Student Need Special Training?"

PATTERNS:
The Primary Braille Reading Program

Hilda Caton, Researcher
Eleanor Pester, Editor
American Printing House for the Blind

This is a presentation of a new Braille reading program *PATTERNS: The Primary Braille Reading Program,* published by the American Printing House for the Blind (APH). The project to develop this program was originally funded by the Bureau for Education of the Handicapped (BEH)[1] for the first 3 years, during which time the experimental material was written. After the first 3 years, funding was not renewed by BEH, but was supported by APH. APH continues to fund this project, now in its 5th year.

Up until this point in time, the materials that have been used to teach children to read Braille were print textbooks transcribed into Braille. Print and Braille are not the same media. This has created any number of problems, such as an inability to reproduce pictures, diagrams, etc. Improper sequencing of words for the Braille code is another problem. A word that is easy in Braille may not be easy in print and vice versa. In addition, there is a very controlled repeat pattern of these words in the print program. For example, if a word is introduced at the preprimer level, it is repeated a certain number of times on each page, a certain number of times within each story and within each level. As that word is mastered, the repeat pattern trails off and another word or words are started through the same repeat pattern. One of the things that was happening to kids who were learning to read in Braille was that they were not having difficult words in Braille repeated enough, while some words with no similarities in Braille were repeated more than necessary.

Just prior to the start of this project, a national survey was conducted to see where kids who read Braille were standing in terms of their reading. It was based on achievement in print readers because these are the materials they were reading. The survey examined the number of years the students had been in school. They were still at least 1½ years behind where one would expect them to be in reading. In the April issue of the *Journal of Visual Impairment and Blindness,* there is a description of this study written by Hilda Caton and Earl Rankin.

Although there has been much discussion in the field regarding the decreasing number of blind and visually impaired students, APH quota registration figures indicate an increase in the number of these students. The need for a Braille reading program is substantiated by these numbers.

A review of research on Braille reading and related subjects was conducted at the start of this project. Research on the Braille code was applied to a combined Dale and Dolch vocabulary list for this series. Studies used for this included the 1969 Ashcroft study "Errors in Oral Reading of Braille at Elementary Grade Levels," "Perceptual Factors in Braille Word Recognition" (Nolan & Kederis, 1969), and the Report of the Uniform Type Committee (American Association of Workers for the Blind, 1970). Categories of the Braille code were identified by Ashcroft, and within these categories, things like characters that are easily confused with other characters were identified. The easiest category was identified as alphabet words. Application of this finding revealed that every single one of the alphabet words was in the Dale/Dolch list except the word "knowledge."

In order to determine which letters (and alphabet words) were easiest and should be presented first, four research reports were received. At first glance, there seemed to be very little agreement in the lists about which letter to teach first, second, and so on. Therefore, the lists were divided into three sections - easy, medium, and difficult. It was assumed that if a letter appeared in the easy sections of the lists that it must be an easy word. This premise was used for ordering the alphabet. The next easiest category was identified as words in full spelling. In addition, words with the smallest number of characters and the smallest number of dots are the easiest. With these findings in mind, the words in the Dale/Dolch list were fed through the APH computer and ordered according to number of characters and then according to number of dots, from the least to the most. The next categories in order of difficulty were identified as the upper cell words and contractions, the lower cell words and contractions, words with combinations of orthography, words with multiple cell contractions, and short form words. All the words in the Dale/Dolch vocabulary list that fit these categories were listed. Thus, all of the words in the Dale/Dolch vocabulary list were organized into categories according to their difficulty in Braille.

There was surprisingly little research directly related to the teaching of Braille reading. The main approaches used seemed to be a linguistic or phonetic approach and an experience or concept-development approach.

Other related research topics which were examined included hand use, reading rates, and formats for tactile materials.

Summaries of all of our research findings were written in a report entitled "Specifications for Selecting a Vocabulary and Teaching Method for Beginning Braille Readers." This has been published by the American Foundation for the Blind (Caton, Pster, & Goldblatt, 1979) and is available for $2.40.

An article in the October 1979 *Journal of Visual Impairment and Blindness* (Canton) also described some of these findings. These are the specifications which were used in developing *Patterns.*

[1] Bureau of Education for the Handicapped (BEH) has been reorganized. It is currently the Office of Special Education and Rehabilitation Services in the new U.S. Education Department.

At this time, a consulting committee was selected to help in the development of the program. This committee consisted of teachers of the visually handicapped, Braille and reading experts, trainers of teachers for the visually handicapped, and a member of a state Department of Education in charge of the visually handicapped. Among others, our consulting committee included Mrs. Ruth Craig, formerly from Brigham Young University (now retired); Dr. Phil H. Hatlen from San Francisco State University; Miss Freda Henderson, formerly from Tennessee School for the Blind (now retired); Dr. Earl Rankin from the University of Kentucky; Dr. Evelyn Rex from Illinois State University; Miss Marilyn Sorenson from the Minnesota State Department; Mrs. Bonnie Trowbridge from the Public Schools in Pekin, Illinois; and Dr. Mila Truan from the Tennessee School for the Blind and from Peabody College.

In addition to these consultants, someone was needed who could do the actual writing of the lessons and children's stories. Mrs. Eddy Jo Bradley, who has worked for both Scott, Foresman and Harper & Row publishing companies as a directing editor, was just the person we needed. Among other things, she helped write the popular reading series about Dick, Jane, and Sally; and she definitely knew how to put together a reading series. With a set of the specifications and advice from the consulting committee, Mrs. Bradley began writing the first level.

It soon became apparent that the help of a linguist was needed to assist further in the ordering of the Braille code and on language development. Dr. Eric Hamp, the Robert Maynard Hutchins Distinguished Professor of Linguistics at the University of Chicago, served in this capacity.

From the input of Dr. Hamp, several important aspects of Braille reading were noted. Even though it is complex, there are positive aspects to the Braille code. One of the first postive aspects is that blind children can read longer, more complicated sentences quicker than print readers because of the use of alphabet words. Sentences like "People can not do that" are able to be read early and, therefore, reading is more interesting and more meaningful. Children are motivated to read.

Another involves phonetic analysis in Braille. Unlike print readers, who learn a sound for "c" and then a whole new sound for "c" followed by "h," the Braille readers avoid this confusion by learning the sound of "c" and then are given a different Braille unit for the sound of "ch." Other Braille units, such as *ar, ing,* and *sh,* aid the reader in the same way. The program was written to take advantage of such positive aspects of the Braille code whenever possible.

In print, children are taught that when two vowels are together in a word, the first one has the *long* sound and the second is silent; or when there is a vowel, a consonant, and then a final "e" in a word, the vowel sound is *long.* This causes a problem in Braille words containing signs like "in" and "ed." *Patterns* solves this problem by teaching the rules given above to Braille readers and then supplementing them with rules such as when there is a vowel followed by an "in," as in "ra*in,*" the vowel sound is *long;* and when there is a vowel, a consonant, and an "ed," as in "hop*ed,*" the vowel sound is *long.*

The approach or teaching method used in this series is eclectic, enabling the reader to benefit from the strengths of the various approaches or methods. A phonetic approach or a decoding approach was used whenever possible. When this approach is inappropriate, memorization, context clues, comprehension, and syntax are used. There is a strong emphasis on concept development, similar to the experience approach to reading.

The readiness level has a 20-word vocabulary. Most of these words are alphabet words. Words that research showed were easily confused were spaced far apart so that the student learned the first one well before being introduced to the next one. A few words at this level, such as "and," were needed in order to tell a story and so were introduced even though they didn't fit in the category of easy words. A few other words, such as "we," "ride," "me," "get," and the names of the children, "Pam" and "Tim," were introduced in full spelling.

The *Patterns* series does not violate the Braille code to any great extent, but it does avoid some things for a while. It double-spaces between words on the readiness level. The readiness, preprimer, and primer levels are all inner lined. The readiness level is done on only one side of a page. At the early levels, no sentences carry over to the next line or page. Also, at the early levels, words like "and" and "the" were always separated by spaces, and the word "to" was used in its uncontracted form so that the children could identify these as individual words. Later, the children were taught that "and" and "the" could be written together and that there was another, shorter way to write "to." By the time pupils complete Book 3, they have been exposed to the whole literary Braille code as it is normally written.

In the early levels, the program does not use all the punctuation. No end punctuation or capitalization is used for sentences at the readiness level. As students move into the preprimer level, they gradually encounter capitals at the beginning of sentences as well as periods, commas, and question marks. Quotation marks are not used until the end of the preprimer level. A play type of format is used prior to this to indicate which character is speaking. By Book 3 level, students have been introduced to all kinds of punctuation such as italics and double capital signs.

This program does not attempt to introduce words of a certain kind together, such as dot 5 words. This would certainly create some problems, since it would be very difficult to tell a good story using all the dot 5 words. It would also be very confusing if there were only one or two dot differences in the words. After the children have been introduced to a number of words, groups with similarities may be pointed out to them. Also at this time, worksheets are used to drill on specific "confusers." There is a very strong emphasis on the use of context and comprehension skills as well as a great deal of repetition of the vocabulary words, particularly those words that are not decodable.

Teachers need to be aware that, if the student already knows certain skills, he doesn't need to go through all the repetitions. The repetition is provided for slower students. If a student has already begun to read Braille, the teacher could give that child the criterion reference tests to find the appropriate placement level for initial instruction. If a student is reading in another reading series in the regular classroom, he may work in this program simultaneously.

The content of the readers is written specifically for the blind and visually impaired students. There are running characters throughout the first two levels of the series. Tim and Meg are blind and read Braille. Pat is partially sighted and reads large type. The other characters are normally sighted. Two other characters introduced in this series are a nonambulatory Braille writer named Kate and a girl that takes Bing exploring. A biographical story of a real blind person is included in each of the last three levels. Other selections in the readers are career oriented stories, do-it-yourself projects, science articles, everyday experience stories reflecting experiences of both sighted and visually handicapped children, fables and other fanciful stories, mysteries, participatory activities, plays, poems, raised-line drawings, stories and articles set in other times and places, and tactile maps with map reading activities.

The series contains special notes to the teachers on such things as teaching correct hand position and movement, marking with a crayon, and what to do about various dialects and accents when teaching sound and letter association.

Before beginning the *Patterns* program, students are expected to have completed a readiness program. Suggestions for such a program, which could be conducted using APH materials, are given in a chart inside the front cover of the *Patterns* readiness level teacher's edition. Another readiness program, which is quite compatible with *Patterns*, was developed by Sally Mangold and is available from San Francisco State University. It is called *The Mangold Developmental Program of Tactile Perception and Braille Letter Recognition.*

Patterns consists of six levels - Readiness, Preprimer, Primer, Book 1, Book 2, and Book 3. Each level has a teacher's edition, student text(s) and worksheets, a criterion-referenced test, and review worksheets.

At the readiness level, there are two books, *Go and Do* and *Letters and You. Go and Do* introduces the alphabet words. Each lesson has a selection which the teacher reads aloud. In the student's text, the first 12 lessons are tactile discriminations in which there are rows of Braille shapes, and pupils are asked to find the one that is different in each line. As pupils are introduced to Braille words, they are asked to read part of a story themselves. As their knowledge of Braille increases, so does the amount they are expected to read. By having the teacher read aloud parts of the stories, the need for pictures, as used in print readers, has been eliminated. *Letters and You* introduces the pupils to all of the letters of the alphabet as well as reviewing the vocabulary words learned in *Go and Do.* Each lesson at the readiness level has the following parts: building background, reading aloud by the teacher, concept development, using the book, language activities, and follow-up activities.

There are three preprimers - *Work and Play, Little and Big,* and *Words and Games.* Beginning with the preprimer level, the text is not consumable. There are separate consumable worksheets with each lesson to reinforce the concepts. From the preprimer level through Book 2, the lessons have the following parts: phonological activities, syntactical activities, reading vocabulary, reading and comprehension, oral reading, and follow-up activities.

The other levels of the series are the primer called *City and Farm* in two volumes, Book 1 called *New Friends* in three volumes, Book 2 called *Old and New* in three volumes, and Book 3 called *Far Away and Long Ago* with three volumes and a glossary. Book 3 lessons include dictionary activities and glossary words since dictionary skills are taught on this level.

Initially, only a teacher review of the materials, rather than a field trial, was planned. Later, because of the scope of the project and the valuable knowledge that could be gained, a field trial was initiated.

The study started with a core group of visually impaired students at the readiness level. They went through the program in exactly the same way they would go through any reading program. The students were allowed to progress at their own pace. A set of criterion reference tests (funded entirely by APH) was developed to evaluate each student's performance on each of the six levels because they couldn't use standardized tests. Standardized tests could not be used because of the nontraditional order of presenting vocabulary and skills.

Teachers who are working with children in the field trial are keeping very detailed notes on the lessons relating to the problems children are having. They also fill out evaluation forms as each child completes a level in the program. All the students in the field trial finish a level before the revisions are begun. When students have completed Book 3 in *Patterns,* they will be given the Stanford Achievement Test, and the effect of *Patterns* will be seen.

The program was written so that it could be used in any kind of an educational program for visually impaired students. It is being used in day school programs as well as in residential schools in the field trial. There are students in the field trial who have been in itinerant programs as well as children who are in resource rooms. Used correctly, this program is as useful in a day school as it is in residential schools.

Several things in *Patterns* lend themselves to a situation where a child is mainstreamed and may be working part of the time with a teacher who does not know Braille. Both print and Braille numbers appear on the worksheets to aid in identification. A print facsimile of each text page and worksheet appears in the teacher's edition for that level. Certain parts of the lesson plans, such as building background, reading aloud by the teacher, and concept development on the readiness level, could be used with both sighted and visually impaired children. The lesson plans

give very detailed instructions on how to introduce new things. Sections in the lessons in the teacher's edition are indicated which require the help of someone who knows Braille. These could be handled by the itinerant teacher. This program is not meant to replace the vision specialist.

The *Patterns* materials will be available from APH beginning in September of 1980. There will be a kit of materials for each level consisting of one of each of the student materials and teacher's guides for that level. Additional student materials can be purchased separately.

APH is interested in writing a language arts program which would include writing and spelling and parallel the *Patterns* reading program. The possiblility of writing a complementary library series to accompany *Patterns* has also been discussed. Funding resources are currently being investigated.

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NEW DEVELOPMENTS IN SOCIAL STUDIES AND SCIENCE INSTRUCTIONAL MATERIALS FOR MAINSTREAMED VISUALLY IMPAIRED STUDENTS

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Visually impaired children comprise approximately 1% of all handicapped children being served in our schools. These children are a low-incidence group, together with the hearing and physically impaired. All three share the problem of being undercounted. From the federal level, educators are told that the number of visually handicapped children is decreasing. These decreases result, however, from the unduplicated count required by the Office of Special Education (OSE - formerly BEH). Many visually handicapped students are counted as served under programs for other categories, such as the mentally retarded or the emotionally disturbed, but are receiving services from an itinerant teacher of the visually handicapped. A few are "mainstreamed" full time in public or private school programs and are not counted at all. Because of these factors, an undercount results in the conclusion that the numbers are declining. Less money is then available and less attention is given to meet their educational needs.

In spite of the lack of attention, educators of the vsually handicapped have not been idle; and recent advances in the curriculum area may have major implications not only for this field, but for other categorical areas as well.

Two major curriculum projects, both of which were funded through the Bureau of Education for the Handicapped, have been undertaken recently that we will describe today: Materials Adaptations for Visually Impaired Students in the Social Studies (MAVIS), developed by the Social Science Education Consortium in Boulder, Colorado; and Science Activities for the Visually Impaired (SAVI) project, developed at the Lawrence Hall of Science. These two projects are designed to help classroom teachers teach visually impaired children in their classrooms and to provide interesting materials for nonhandicapped students as well.

MAVIS

Project MAVIS adapted two recently published elementary social studies textbook programs: the *Silver Burdett Social Science* series chosen because it is a high quality, traditional series which has been quite popular with traditional teachers and Houghton Mifflin's *Windows on Our World* series selected because it is also a "good" social studies series bu' takes an affective approach to the subject which makes it one of the more innovative elementary programs.

In each series, student and teacher materials have been adapted. For the students, textbooks at the designated grade levels were transcribed into Braille, large type, and audiotape. Picture descriptions are included in all three media, and tactile illustrations are included in the Braille editions. For teachers, the original teacher's guides which accompany student textbooks were adapted by inserting pages which provide suggestions and directions for making lesson activities more meaningful and effective for visually impaired students. The emphasis in these suggestions is on facilitating the learning and interaction of the visually impaired with nonhandicapped children.

The products developed by MAVIS were field tested during the spring and fall of 1979. Field testing involved the use of adapted student and teacher materials in mainstreamed classrooms. Pretest and posttest data on attitudes toward MAVIS products and on students' congitive gains from the products were collected with testing instruments. Limited observation of the participating classrooms was also carried out. Field testing was conducted in classroom sites throughout the United States. Results of the field testing were favorable, but the large number of social studies texts currently used and the rapid rate they become out-of-date made continuing adaptation impractical. The project moved to developing a series of sourcebooks that would have more universal application.

Six sourcebooks were developed. Although their focus is on teaching social studies, they contain background information and practical guidelines that would be helpful in teaching any subject matter to visually impaired children. Their titles and a brief abstract are listed below.

Who Is the Visually Impaired Child? by Marvin Efron. Written by a practicing optometrist who is also an educator, this sourcebook defines visual impairment for the classroom teacher. Common types of visual impairments, their causes, and their implications for classroom behavior are discussed. The author also examines the student's eye report and educational plan. Photographs simulating various levels of visual acuity and several types of visual field limitations illustrate the text.

Encouraging Successful Mainstreaming of the Visually Impaired Child by Michael D. Orlansky. This sourcebook focuses on the importance of a good working relationship between the classroom teacher and the specially trained teacher of the visually impaired. Using a dialogue format, the author delineates the areas in which these two members of the service delivery system can help and support each other. Specific teaching and classroom management strategies are presented, as are ideas for including the visually impaired child's parents as partners in the educational team.

Teaching the Visually Impaired Child in the Regular Classroom by Madge Leslie. In this sourcebook, Leslie presents the classroom teacher with a primer on teaching the visually impaired student in a mainstream

setting. Planning the visually impaired child's educational program, defining roles of members of the service delivery system, obtaining special materials, equipment, and support services, establishing the classroom enviornment, and guidelines for effective teaching are among the topics covered.

Social Studies for the Visually Impaired Child by Laurel R. Singleton. Based on the Project MAVIS adaptation experience, this sourcebook presents strategies for adapting common social studies activities for the visually impaired child. Discussions, research, map and globe skills, field trips, and interpretation of pictures are only some of the activities discussed. The sourcebook also outlines a procedure for adapting standard social studies textbook materials for use with the visually impaired student.

Important Concerns in the Education of Visually Impaired Children by Philip H. Hatlen. In Sourcebook 5, Hatlen describes the development of current service delivery systems in education of the visually impaired and analyzes the advantages and disadvantages of each. This discussion is followed by a description of what can occur if the system is not functioning properly. The sourcebook concludes with a discussion of crucial learning areas for visually impaired children and a list of appropriate role responsibilities for the classroom teacher and the specially trained teacher of the visually impaired.

This booklet raises questions and issues about what educators are doing in the mainstreaming of our visually handicapped children. Many are not getting what they did previously when they were "integrated" into the regular classes. Some, especially in our secondary programs, are not receiving the support service they really need.

Resources for Teaching Social Studies in the Mainstreamed Classroom by Laurel R. Singleton and Madge Leslie. This sourcebook presents a listing of four kinds of resources for teaching in the mainstreamed classroom: (1) readings on visual impairments and the teaching of visually impaired students; (2) organizations and agencies providing services to the visually impaired or related professionals; (3) materials and equipment useful in teaching the visually impaired child; and (4) materials for teaching about disabilities.[1]

Project MAVIS has been the subject of controversy. One of the concerns centers around the need for a separate text and program in social studies. One outgrowth of a project, such as MAVIS, would be to have textbook publishers include inserts or suggestions for the classroom teacher for visually handicapped children so that the teacher using any social studies text would be able to obtain ideas to support handicapped children in the regular classroom.

One positive aspect of Project MAVIS has been the focus on the fact that handicapped children can be integrated into social studies with some adaptations. The implementation demonstrated the value of bringing together teachers of the visually handicapped and teachers of social studies. This model can be adopted by special education teachers who are doing inservice with regular teachers to help mainstreamed students.

SAVI

The second project, the SAVI program, Science Activities for the Visually Impaired, has now completed nine modules: (1) Scientific Living and Structures of Life, (2) Communication, (3) Mixtures and Solutions, (4) Environments, (5) Measurement, (6) Environmental Energy, (7) Kitchen Interaction, (8) Magnetism, and (9) Electricity.

Each SAVI folder contains an overview of the unit; background information to provide the student with necessary information before starting the particular project; a statement of the purpose of the particular project; a statement of the purpose of the particular module; the materials that are to be used; suggestions for solving problems the student might encounter; a step-by-step outline for the activity; evaluation; and supplemental activities. Sections on language development and living skills are also included.

SAVI is designed for children between the ages of 9 to 12. It is also used in junior high schools, and the activities are such that they can be used with younger children as well as adults. Each activity is designed for groups of four children each. In a special classroom, four visually handicapped students may work together, even when they are at different achievement levels. The intent of the developers, however, was to have a visually handicapped child use the materials in a regular classroom with three nonhandicapped partners.

SAVI is in its final stages of dissemination. It will be available commercially, but not through the American Printing House for the Blind.

During the evaluation phase, SAVI materials were used in public school classes with other handicapped pupils. One study focused on whether student behaviors changed as a result of being involved in hands-on activities. Results showed that when pupils spent time with the materials in the company of nonhandicapped peers in their formal classroom academic instruction, their interaction outside the classroom improved.

SAVI materials are now being adapted for children with physical handicaps in a companion project of Science Education for Learners with Physical Handicaps (SELPH). Future plans call for adaptations for children with learning disabilities.

[1] Social Science Education Consortium • 855 Broadway • Boulder, Colorado 80302 (Cost: $15.00/set)

SAVI and the related projects emphasize that it is not a curriculum by itself - rather, it is meant to be a supplementary curriculum. Many teachers are adapting the ideas and concepts to their math and language arts programs.

These two projects, MAVIS and SAVI, reflect the value of special adaptations and materials in working with visually handicapped children in regular classes. Creative teachers in both regular and special education should find them challenging and should give them ideas of how to apply the principles to other curriculum areas.

COMPUTER-BASED INSTRUCTION IN GRAPHIC SKILLS FOR THE VISUALLY IMPAIRED

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Computer Science Department
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Many blind persons are unable to write even one or two words (in particular, their signatures) fluently and legibly. Blind persons may also experience difficulty in expressing themselves graphically, for example while trying to draw rough diagrams or while coloring in pictures with tactile outlines. Most sighted persons can write short phrases with their eyes shut, showing that handwriting is more a learned motor skill than a visual skill. Other graphic skills also tend to have a significant motor component. Acquisition of even limited graphic skills can, however, prove very difficult for persons whose visual characteristics are such that they do not receive adequate feedback regarding the position and shape of marks made during pencil on paper type exercises (even if thick felt pens and/or magnified images are employed).

A computer-based handwriting training system for the blind has been developed in the Artificial Language Laboratory of the Computer Science Department at Michigan State University. When a trainee performs writing exercises presented by this system, synthetic speech, audible tones, and tactile stimulation are used to give information about letter shapes and pen movements in non-visual form. Substantial improvements in "pencil on paper" writing have been observed during initial experiments. Completion of a classroom-portable microcomputer-based version of the system will facilitate wider application and evaluation of the techniques employed.

1.0 INTRODUCTION

Although Braille and typewriting can meet many of a blind person's requirements for recording and communicating information in hard-copy form, handwriting is still a very desirable skill. The most obvious need arises through society's increasing use of a signature in, for example, verifying credit transactions and personalizing written communications. Each person's signature is unique and its appearance usually says a lot about the self-assurance and competence of the signer. Many otherwise capable blind persons are, however, unable to sign their names fluently and legibly. Even though they cannot perceive the results directly, blind persons may sometimes wish to express themselves graphically. Such situations might arise when a blind person needs to describe the shape of something to a sighted person, for example. Graphic expression is facilitated in such cases if the drawing implement leaves a tactile as well as a visible image, but appropriate media will often be unavailable. Many blind persons are adept at determining the spatial organization of quite complex objects through their tactile and proprioceptive senses. Given these skills and appropriate exercises, it should be possible to develop the converse skill of using a pencil for graphic expression.

Acquisition of even limited graphic skills will have positive effects on the dignity, privacy, and independence of blind persons. Johnson (1970) reports that learning of script writing is one of the services most frequently requested of rehabilitation teachers by the blind. Several methods have been devised for teaching script writing to the blind, based largely on use of tactile models of letter shapes during instruction and on guides of various types to help form letters and maintain alignment and spacing. Unfortunately, the use of guides can have adverse effects on the appearance of the writing produced because of pauses and other interruptions to flowing movement of the writing implement.

Can the need for such guides be reduced? Sighted readers may verify for themselves that there are usually only minor differences in speed and appearance when they write the same short phrase with eyes open and eyes shut. The writing ability of persons who experience blindness after learning to write also is relevant here. An acquaintance of ours who experienced blindness at age 18 is still writing fluently seven years later. As a speech pathologist, she makes handwritten notes during evaluation of clients for later use by speech therapists - handwriting is appropriate here because it is unobtrusive. Handwriting is thus more a learned motor skill than a visual skill. Vision is used more for positioning, alignment, and spacing; and blind, freehand writers might still use various aids to substitute for this function.

An important role of vision is in the process of acquiring writing skills (and possibly in aiding long-term retention of these skills). Described below is a handwriting training system for the blind, which uses computer techniques to transduce visual information about pen movements and the shapes of lines into non-visual form. With suitable exercise material, training could also be given in graphic skills other than handwriting. More-detailed information on this system is given by Macleod, Jackson, and Eulenberg (1979), and Macleod (1979).

2.0 SYSTEM OUTLINE

In exploratory studies, sighted and blind subjects held a digitizer pen and used auditory and tactile feedback to follow "invisible" model paths defined in computer memory as sequences of pen co-ordinates. These studies showed that, at each point during their efforts to track a path, trainees needed to know about: (1) the path direction; (2) the

pen's position relative to the path (i.e., was the pen left/right/above/below the path); (3) the shape of curves making up the path; and (4) any impending changes of curvature or direction.

These requirements are largely satisfied by the system depicted in Figure 1. For each pen position, a "matching" point on the model path is computed. As indicated in Figure 2, a good correspondence with intuitive judgments is obtained by drawing a line which intersects the pen track and model path at equal angels. The "current" matching point is the point of furthest advance of the matching point along the path. To derive an indication of path direction, a "target" point is computed by marking off a small distance from the current point along the direction of the path. The direction from the pen location to the target point is indicated in tactile form, using eight vibrators mounted in a wrist cuff fixed to the trainee's writing arm. If the uppermost vibrator is turned on, for example, the trainee should move the pen upwards.

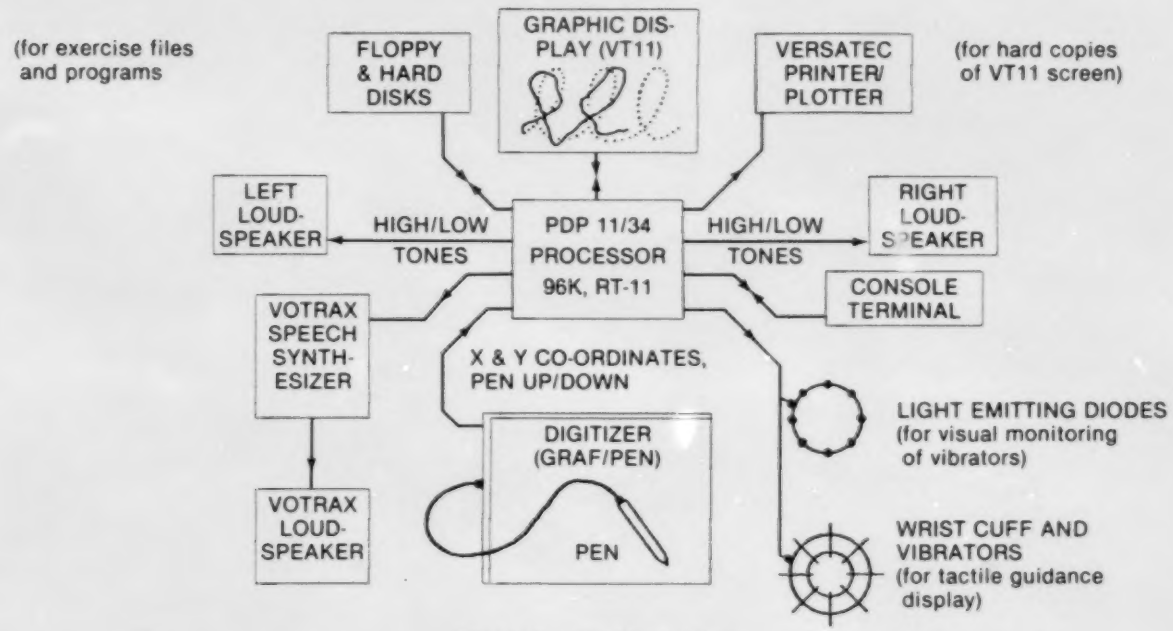


Fig. 1: **System block diagram**

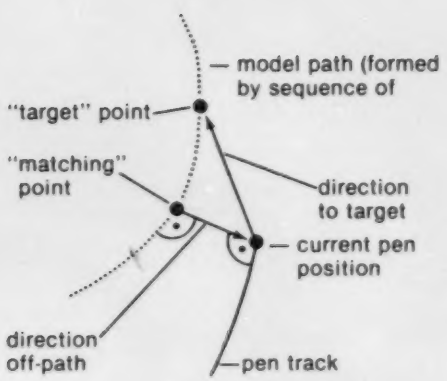


Fig. 2 **Computation of "matching" point**

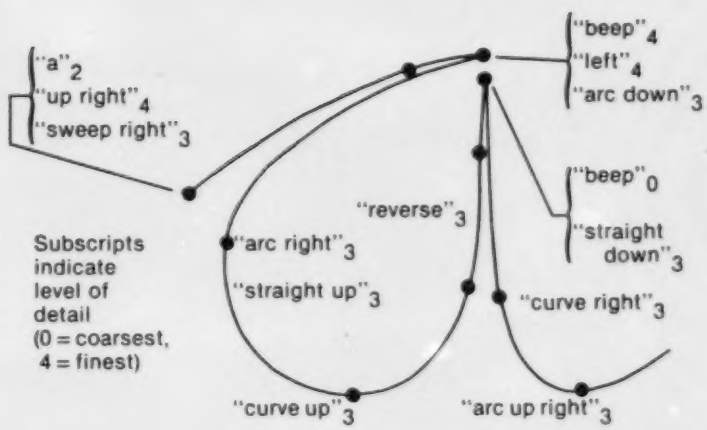


Fig. 3: **Example of spoken descriptors**

A second directional display uses audio tones from stereo loudspeakers to communicate the "off-path" error distance between the pen position and the current point. A high/low tone means that the pen is above/below the path and greater volume from the left/right loudspeaker means that the pen is left/right of the path. A blend of high and low tones coming from the center means that the pen is more or less "on-path." As the pen is moved away from the path, the overall volume decreases and the tonal character changes, at a rate determined by a preset error tolerance.

The two directional displays are complementary and enable trainees to track model paths fairly smoothly and accurately, but they give only a "localized" view of the tracking task. When tracking letter shapes, this limitation is alleviated by using computer synthesized speech to give the name of each letter as it is started, information about the shapes of letter elements, and notice of approaching corners, reversals, and changes of curvature as appropriate points along the path are reached. A reasonably small but easily understood set of spoken instructions and shape descriptors is employed. All letter elements join smoothly onto neighboring elements unless there is an "angle" or "reverse" in between. The spoken descriptors act partly as landmarks and increase subjects' awareness of their position along the path when following letter shapes.

3.0 SYSTEM OPERATION

Exercises to be tracked are represented as short vectors making up approximations to the desired paths. Exercise files consist of a series of x, y co-ordinate pairs (the end points for each vector), accompanied by a flag value for each point which indicates such things as whether it is a "pen-down" or "pen-up" point, a singularity (corner or reversal point), or a point at which an utterance is to be spoken. Exercises are prepared using the digitizer to trace over the desired paths. An interactive graphics-editing program allows paths to be tidied up, points to be moved, erased, or inserted, and flag values to be changed (e.g., to include spoken descriptors).

3.1 TRACKING GUIDANCE

After requesting the trainee name, exercise file to be used, and any changes to default parameters (such as scale factor and error tolerance), the main exercise program (TRACK) plots the exercise file on the VT11 display screen. A spoken instruction "go" tells the trainee to commence. A small, square box moves around on the VT11 screen, showing the current pen position in relation to the exercise paths; and the trainee is directed toward the pen-down point by means of the audio and tactile displays. If the trainee does not progress steadly toward the pen-down point, a spoken prompt directs him/her toward this point by saying "go up left," for example.

When the exercise start is located within the specified error tolerance, the trainee is instructed "pen-down." As the pen is lowered and the trainee commences to move in the direction of the path, TRACK computes the matching point on the exercise path for each co-ordinate read. The current point is shown on the VT11 screen as a small cross which moves along the exercise path in sympathy with the pen, whose track is also plotted (as a heavier line than that used to plot the exercise path).

If the trainee gets too far off the path or is too slow to advance along the path, a spoken prompt as to the desired direction of movement is given. This helps prevent situations where the trainee gets "stuck" and doesn't know what to do next.

3.2 PREDICTIVE FEEDBACK

The more adept a trainee becomes at following a given exercise, the more significant is the perceptual-plus cognitive-plus response delay between receiving new directional information from the system and reacting to this new information. Thus, if the trainee is moving quickly along a gradual sweep upward which suddenly turns left and curves downward (as at the top of an "e" or an "l"), he/she will tend to "overshoot" and make a larger loop than desired simply because of the 0.25- to 0.5-second delay in responding to the directional indication. Fortunately, the computer can calculate the average velocity of the current point along the path and predict where it will be in 0.3 seconds, say. By giving the trainee directional information relevant to this predicted position, the effect of overall response delay can be reduced substantially.

3.3 RECORDING OF RESULTS

On completion of each exercise, TRACK plots various parameters on the VT11 graphics screen, including date, time, trainee name, exercise file, scale, average distance off-path, and execution time. These last two parameters are spoken out for the trainee's information. The graphic display, including the exercise paths and trainee's pen movements, may be saved as a computer file for later production of a hard-copy record via the VERSATEC dot matrix printer/plotter, or for subsequent restoration to the VT11 screen.

4.0 INSTRUCTIONAL STRATEGY

A range of introductory programs and exercises is provided to familiarize trainees with the system components and to improve steadily their ability to sense, interpret, and respond to information presented via auditory and tactile stimulation. The eventual aim is to make the operation of following a path more or less automatic, so that trainees can

attend to path shapes and start to perceive differences between their shapes and those of the models.

4.1 FAMILIARIZATION PROGRAMS

These programs are designed to introduce the methods of auditory and tactile stimulation without placing the trainee in a pass/fail situation. The first program (ROTATE) smoothly rotates in a directional indication on the audio and tactile displays (interpolating between tones and stimulators) for several revolutions at a speed of about five seconds per revolution. Comfortable levels of stimulation are found by adjusting volume and intensity controls - either display can be turned off if desired. Trainees usually experience a sensation of something moving around their wrist and may perceive the audio tones as simply moving back and forth or possibly as moving in a circle (with the high tone spatially "above" the low tone). The stimulation then steps around without interpolation. After presenting the direction "right" for 1.5 seconds, the synthetic speech announces the direction displayed and, after a further 2.5 seconds, steps to the direction "up right." The process repeats until at least one revolution is completed. The final phase of ROTATE uses the same type of presentation except that the directions are chosen at random, and trainees try to decide for themselves which direction is displayed in the 1.5 seconds between onset of stimulation and announcement of direction. When trainees gain experience and confidence, they are encouraged to say out loud the direction they think is displayed before the computer announces it.

Another familiarization program (TRAIN) introduces the digitizer pen and the concept of auditory and tactile stimulation guiding the trainee toward a target point, as when finding the start of a path and similar to the situation when following a path. A roughened tactile target point is centered on the digitizer board. The wrist cuff displays the direction the pen has to be moved in to reach the target, and the audio tones display the position of the pen relative to the target. As trainees move around with respect to the target, they gain experience in sensing and interpreting the two displays in a situation where they can tell in other, more familiar, ways where the pen lies in relation to the target.

4.2 INTRODUCTORY EXERCISES

Subsequent introductory exercises use the main training program (TRACK) with tracking exercises of graded complexity. In the first of these, five horizontal lines about 15cm long (lying on top of each other) are followed. On locating the pen-down point at the left-hand end, the computer announces the direction "right," and the trainee tries to follow the path, responding to the auditory and vibratory cues. As he/she approaches the right-hand end of the first line, the system warns "reverse" and sounds a beep as the end point is reached. The direction "left" is then announced, and the process continues until the trainee has been back and forth over the same path five times. After gaining experience with following straight lines in the eight principal directions, a diamond-shaped composite exercise involving paths in all eight directions (with the pen being lifted between paths) is given. Curved paths are then introduced, starting off with gradual curves (dips ⌣ and mounds ⌢) and culminating in peaks (ꟷꟷ), humps (ꟷꟷ), and loops (ꟷꟷ).

4.3 TEACHING OF LETTER SHAPES AND SIGNATURES

Trainees are introduced to new letter shapes by letting them explore tactile images (e.g., of the thermoform type [Anon, n.d.]), by holding their hands and tracing out large letters with their index fingers, and by drawing letter shapes on the palms of their hands. Letter shapes are then taught on the computer, using large letters initially (about 2.5cm high for a lower-case "a") which are followed using whole-arm motions rather than wrist and finger movements. Letters are taught in groups according to their method of construction, starting with simple shapes such as "i," "t," "u," "e," and "l," and moving on to more complex letters such as "k" and "f." The digits are taught as one group. The computer announces the name of each letter as it is started and then describes the shape of the curves as the letter is followed. Figure 3 gives an example of the way in which descriptors are employed. The level of detail is reduced as the trainee gets to know the letter shapes and becomes faster at following them.

Trainees' signatures are analyzed into components (letters, pairs, and syllables), and exercise files are constructed especially for each signature, giving practice in the components and eventually the full first and last names. As speed increases, predictive feedback becomes more important and spoken descriptions less important. The size of letters being followed can be reduced progressively toward the size of conventional writing by typing in an appropriate scale factor when program TRACK is initiated. When the trainee is following his/her signature quickly and accurately, the assistance given by the training system can be reduced gradually by abbreviating the spoken descriptions, increasing the error tolerance (with the result that the system gives the trainee less assistance with staying on the path) and reducing the intensity of auditory and/or tactile stimulation. At this stage, increasing emphasis is placed on "pencil on paper" type exercises.

5.0 RESULTS

Experiments to determine the effectiveness of the computer-based system in teaching handwriting skills to the blind are continuing. The results are clouded somewhat by the small number of subjects used, by the short time scale of the experiments, and by the fact that the system was undergoing more or less continual development. Nevertheless, the results are very promising, particularly when the short period of instruction the subjects had is compared with the period over which handwriting skills are usually acquired by sighted students.

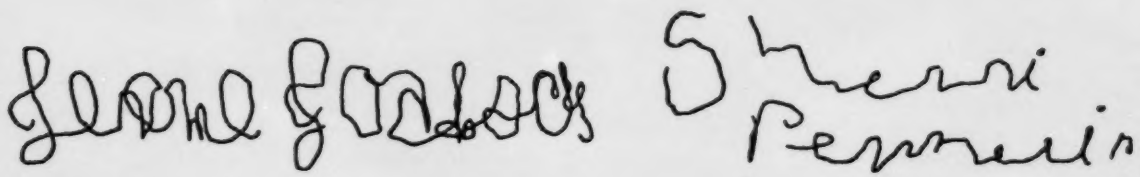
5.1 EXPERIMENTAL SUBJECTS

Two main subjects were used during the course of the project. The first subject (JJ) is a Systems Analyst/ Communication Enhancement Specialist and was an investigator on the project. He played a major part in determining system requirements and in evaluating alternative approaches toward meeting these requirements. JJ is a 30-year-old male who experienced blindness at age five - he has no useful vision but retains some light perception in one eye.

The second subject (SP) is a 25-year-old female undergraduate at MSU - she is congenitally blind and has no light perception.

The objective of the experiments with both subjects was to see if the appearance (and eventually the speed) of their signatures could be improved with computer assistance. Both JJ and SP had learned to write using the index finger on one hand as a guide while letters were drawn with the other hand. No freehand writing samples were collected at the start of instruction because neither subject felt comfortable about attempting writing without using this guide.

Figure 4 shows examples of JJ's and SP's initial signatures. In JJ's case, the inter-letter spacing is sometimes inadequate, the writing has a halting and shaky appearance (some letters are barely legible), and the execution time is much longer than the five seconds or so typically taken by a sighted writer. In SP's case, the inter-letter spacing is satisfactory; but some letter shapes are distorted, and the execution time also is long by comparison with sighted writers.



Jerome Jackson, 6 March 1979, 22 seconds
(written left-handed, using tip of RH index finger as a guide)

Sherri Permelia, 26 April 1979, 23 seconds
(written right-handed, using side of LH index finger as a guide)

Fig. 4: **Examples of JJ's and SP's initial signatures**

5.2 ACQUISITION OF TRACKING AND WRITING SKILLS

At the stage when JJ and SP were learning to use the system, the instructional strategy and materials were not as well developed as currently. The main tools used were ROTATE and TRACK together with exercise files for the diamond-shaped, straight-line composite and for three large loops. SP took somewhat longer (in terms of both elapsed days and hours of instruction) than JJ to become proficient at tracking. Two possible reasons for this were that, as a co-investigator on the project, JJ was quite familiar with the components and objectives when instruction began, and that he had better access to the system and was able to take part in from three to five half-hour sessions a week, whereas SP usually took part in only one session a week. This clearly left too long a time between sessions and had an adverse effect on her speed of learning. Some of the increased training time might also be a result of the differences between adventitious and congenital blindness.

Both subjects became quite proficient at following straight lines, then curves, and eventually letter shapes and words. During the initial experiments (from March through June 1979), many blind visitors to the project tried the system out. These trials did much to point out weaknesses in early versions of the system and the need for better instructional material. Several recent visitors have been able to complete the diamond-shaped exercise without any great difficulty, following only ten minutes or so of instruction.

SP and JJ went on to practice letter shapes and signatures, using full spoken detail and large letters initially. As tracking accuracy and letter shapes improved, emphasis was placed on reducing execution time and the most detailed levels of spoken description were omitted, retaining just letter names and the basic commands ("pen-up," "reverse," etc.). The system was undergoing rapid development during the early stages of JJ's instruction, and exercises with his signature were postponed. JJ worked on the names of several acquaintances as tracking practice to help idenitify needed system improvements and as a test of the system's ability to teach freehand writing.

Figures 5 through 7 show development of freehand writing skills (pencil on paper) over a four-week time period with about two to three hours of computer-based instruction per week. Figure 5(b) shows the first freehand writing ever performed by JJ. The letters are quite legible, but the capital at the beginning of "Cindy" does not have the conventional proportion relative to the other letters, and distinct pauses can be seen between the letters. Figure 6 shows the name "Michele" after further practice with the system. The initial letter now has better proportion, although it is distorted, and letter interconnections are getting smoother - the writing is starting to flow. Figure 7 shows further improvement in letter shapes and smoothness of line. As the speed of execution increased with practice, so predictive feedback became very important - see Figure 8.

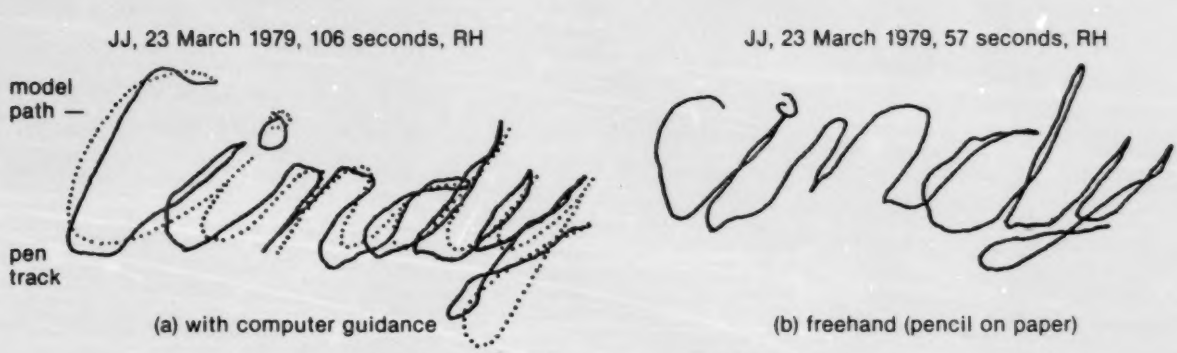

JJ, 23 March 1979, 106 seconds, RH
JJ, 23 March 1979, 57 seconds, RH
model path
pen track
(a) with computer guidance
(b) freehand (pencil on paper)

Fig. 5: **Early attempts at writing "Cindy"**

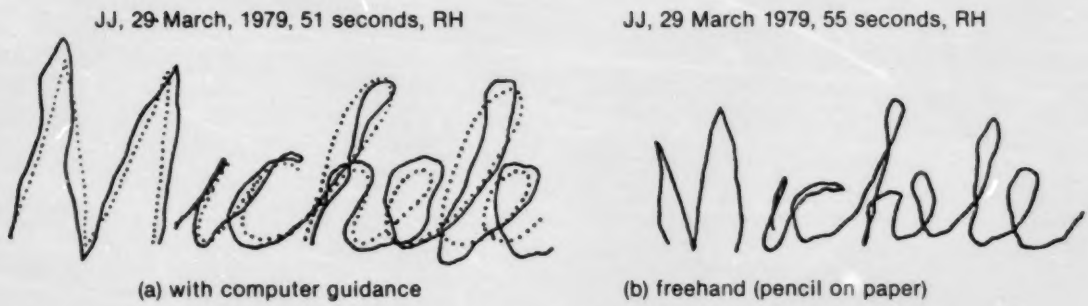


Fig. 6: **Early attempts at writing "Michele"**

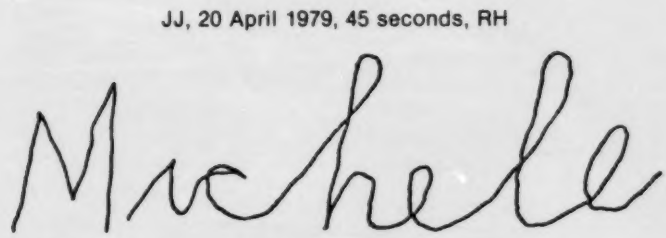


Fig. 7: **"Michele" written freehand after approximately 40 attempts with computer guidance**

By early May 1979, the system was sufficiently stable to commence instruction with JJ's signature. As a result of his earlier work with the system, JJ now felt confident enough to attempt his signature in freehand writing. Figure 9 shows examples of data collected at this stage. Note the strong transfer of the skills acquired in practicing other material (the letters "k" and "s" had not been practiced.).

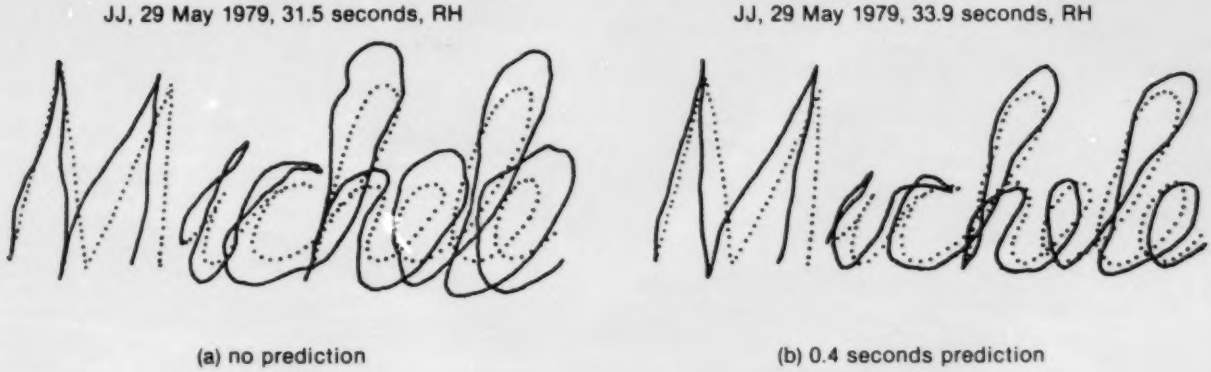
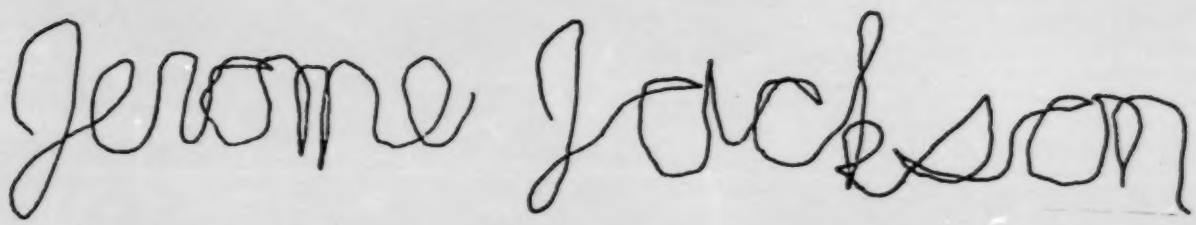


Fig. 8: **Effect of predictive feedback**

28 seconds 45 seconds

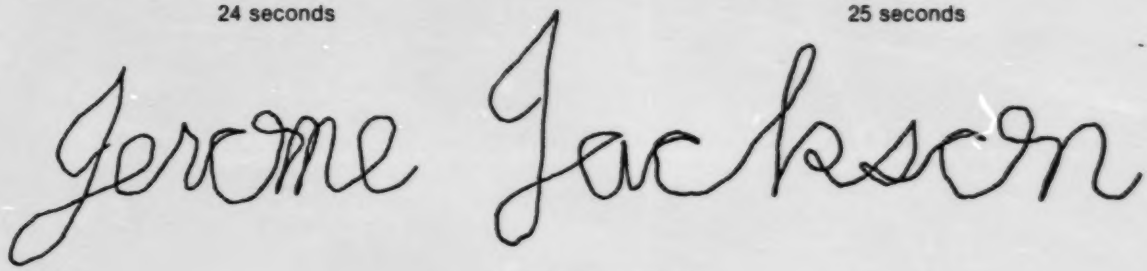


JJ, 10 May 1979, RH

Fig. 9: **Transfer of skills following practice with other material**

In discussion with JJ, letter shapes for his new signature were selected and exercise files made up. It took several exercise sessions before JJ was comfortable with new shapes for the "J" and the "o," which were intended to make his signature distinctive and easier to execute. An example of JJ's freehand signature after 10 practice sessions is shown in Figure 10. In comparing this example with the earlier data in Figure 9, the "Jerome" is little better in appearance but was executed somewhat faster. The "Jackson" is much improved in both respects.

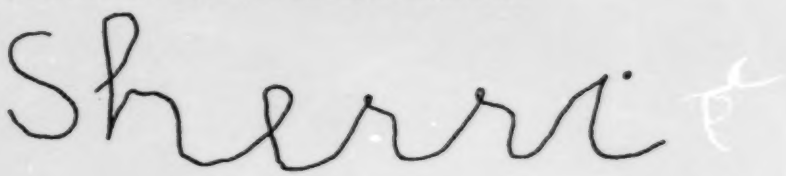
24 seconds 25 seconds



JJ, 29 June 1979, RH

Fig. 10: **JJ's freehand signature after practice with computer model**

SP's original signature (complete with its distortions) was deeply ingrained, but the system gradually molded her responses so that they more closely approximated the model. After only three exercise sessions with her first name, Figure 11 shows SP's freehand version (her first freehand writing). An overall improvement in appearance between the original guided first name and the freehand version can already be observed.



SP, 14 June 1979, 53 seconds, RH

Fig. 11: **SP's first name written freehand after 3 practice sessions with computer model**

6.0 DISCUSSION

Apart from improving their handwriting skills, subjects report that they enjoy working with the system and feel at ease because of the different levels of assistance provided. The availability of verbal prompts not only prevents the user from getting stuck, but also indicates that occasional inability to interpret the auditory and tactile information presented does not represent a failure on his/her part to meet expectations.

6.1 INFORMATION DERIVED BY SUBJECTS

Subjects were able to integrate the three types of information presented (via vibrators, tones, and speech) to derive information about letter shapes and pen movements which could not be discerned easily from any single source. Tracking can be performed using only the vibrators, only the tones, or only the speech (having to wait for prompts makes this slow), but the combined information gives subjects a better representation of the pen in relation

to the path and leads to improved tracking. The ability of subjects to perceive fine details about the exercise paths they are following and the agreement between shapes learned using the computer and the same shapes presented in tactile form, suggests that the most important aspects of the visual information have been abstracted and represented in non-visual form.

The time necessary for subjects to become adept at following exercise paths is fairly short (typically from 5 to 15 hours of instruction). The introductory exercises were also quite effective in improving subjects' awareness of the spatial position of the pen tip. The skills used in performing the diamond-shaped exercise were basically those which are used in drawing simple diagrams. Attempts by subjects to reproduce this figure with pencil on paper clearly demonstrated their increasing competence and confidence with such tasks.

6.2 COMPARISON WITH EXISTING METHODS

One method of teaching handwriting to the blind trains "muscle memory" through use of a stylus to trace out engraved letters [Stark, 1970]. With this method, there are forces on the stylus tip which are not present in normal writing. There are also potential problems at junctions and end points, partly because this method does not prescribe the order and direction of strokes used in writing and the trainee may move along the wrong stroke. A fundamental objection to this method is the rigidity of definition of the model - trainees are not allowed to make their own approximations to the model but are forced to conform to it exactly.

Another method uses a wax pencil to create a tactile image when it is moved over the surface of paper with a screen backing. The trainee explores tactile letter shapes, tries to copy these shapes with the wax pencil, and then compares the tactile images formed by the impression of the screen backing with the original shapes [Freund, 1968]. Trainees get feedback on their letter shapes not as they are being drawn but somewhat later, thus making learning more difficult.

A recent innovation is the "talking pen" which responds to dark and light patterns under the pen tip by producing varying audio tones for different colors and shades [Wayne Engineering, 1978]. The pen can be used to trace patterns, with the sound being emitted when the pen runs off the pattern. This method has the advantage, compared with the stylus in groove method, that there are no forces on the pen tip and that the model definition is less rigid, but it has similar problems at junctions and end points and the added difficulty that the tone does not indicate on which side of the model path the pen lies.

Other methods use moving frames [Marks and Marks, 1956] and corrugated boards which go beneath the writing paper [Anon., n.d.] to help define the line space in which writing is to be performed.

In comparison with existing methods, the computer-based system has several important advantages. It breaks a complex task down into relatively simple steps where tracking operations are not confused by preceding or succeeding strokes. Trainees receive immediate and continuous feedback on whether their performances are satisfactory and if not, why not. Local, short-term feedback is accompanied by global, longer-term feedback on execution speed and tracking accuracy. The model specifications are very flexible and allow wide deviations, but trainees are informed of these deviations and prompted if necessary. Trainees' initial approximations are gradually molded until they correspond more closely to the model, then as guidance cues are progressively removed, the task approaches normal freehand writing.

The computer-based system is consistent in presentation and facilitates management by trainees of their own instruction without having to rely on sighted assistance to the extent otherwise necessary. Two valuable features which would be difficult to implement without computer techniques are (i) the availability of predictive feedback, and (ii) the use of synthetic speech for describing letter shapes, warning of impending changes of curvature and direction, and prompting as necessary.

6.3 FUTURE DEVELOPMENTS

Our two main subjects improved the appearance of their writing and reduced the need for guides, but their freehand writing speeds are, as yet, slower than they achieve with guides. Their speeds are increasing steadily with practice, but letter shapes tend to get distorted as they strive to reduce execution times since, at the speeds involved, they perceive from the computer much less information about the pen's relationship to the computer model than at slower speeds. (As sighted writers approach their speed potentials, they perceive visually less about letter shapes as they are being drawn and relatively more after they are drawn.) Consideration should be given to the best means of presenting tactile images of pen tracks which can be examined directly by trainees after exercises, perhaps by means of a modified incremental plotter.

When the short period of instruction trainees had is compared with the period over which handwriting skills are usually acquired by sighted students, the early results are very promising. Trainees' reactions to the system are favorable - they enjoy working with it and feel at ease because of the levels of assistance provided. It is clear, however, that further evaluation of the techniques employed is required, based on experiments over a longer time scale with a greater number of subjects (preferably with a wide range of abilities). The encouraging early results and trainees' positive reactions have motivated a proposal to the US Office of Special Education and Rehabilitation Services (OSERS) for further development of the system described, demonstration of a microcomputer-based, classroom-portable version, and broad evaluation of effectiveness.

The method of tactile and auditory stimulation used in our system gives a simple and direct indication of the required direction of movement. The techniques developed may, therefore, prove to be appropriate for teaching a range of motor skills to trainees with perceptual and cognitive handicaps as well as with visual handicaps.

Given development of suitable radio or preferably inertial navigation systems, the techniques used in determining where a trainee's pen lies in relation to a specified path and guiding the trainee back toward the path, could be used to guide a blind student about a college campus, for example, until he/she could travel without assistance. Various paths around the campus could be defined as sequences of co-ordinates in the same way as letter shapes, and spoken directions and prompts would be sufficient without auditory or vibratory cues. The guidance unit would fit in a backpack and would include the navigation system (which would provide x, y, and z co-ordinates), a microcomputer, a storage unit (which encodes the location of campus paths, buildings, and landmarks), and a speech generator.

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THE COMMISSION FOR THE BLIND

Philip Peterson, Director

We need to develop a very strong partnership among Education, Special Education, and Rehabilitation to facilitate the rehabilitation of blind youth and adults in Michigan. Further, it is my opinion that one of the most exciting ventures with which the federal government has involved itself since the turn of the century is the federal/state partnership in vocational rehabilitation.

Vocational rehabilitation began in the 1920's in response, in part, to the needs of the casualties of World War I. Since this early beginning, vocational rehabilitation, over a period of many years, has demonstrated that it returns more than nine dollars ($9) to the Federal Treasury for every dollar expended in rehabilitation services. People who were previously unemployed have been trained and placed in jobs, frequently moving from tax consumers to taxpayers.

All fifty states have vocational rehabilitation programs. Twenty-seven states, including Michigan, have separate state rehabilitation programs to serve the blind and visually handicapped. The Michigan Commission for the Blind has full responsibility for providing rehabilitation services under the Rehabilitation Act of 1973, as amended, and Public Act 260 of the State of Michigan.

The Commission for the Blind was formally established in October of 1978 when Services for the Blind and all the operations thereof were transferred to the Department of Labor. Increased responsibilities were placed upon the Commission for the Blind as a result of Public Act 260. The Commission is composed of five members; three members are blind. They serve to establish program policies and procedures.

The vocational rehabilitation program has as its primary objective helping individuals into the world of work with a major focus on employment. The Commission has offices located in Flint, Saginaw, Detroit, Grand Rapids, Kalamazoo, Traverse City, Gaylord, and Escanaba.

Another major component of the program is the Michigan Rehabilitation Center for the Blind, located in Kalamazoo. This is a fifty-bed, residential facility providing a full range of comprehensive, personal adjustment and education services, including Braille and orientation and mobility training. A wide range of other services to help blind individuals obtain those skills necessary to access future employment opportunities and to pursue independent living are offered as well.

The vending-stand program is another major program component of the Commission for the Blind. The Commission is responsible for approximately 121 vending stands in the State of Michigan. The vending stands are located on state, federal, and private property. Additionally, P.A. 260 provides new authority for the Commission to begin to assume responsibility for cafeterias in state buildings and to train blind individuals in the vocational area of cafeteria management. In fact, if resources permit, the Michigan Department of Education building in Lansing is scheduled to open in August of 1982 and include a large cafeteria. Hopefully, there will be resources to train individuals to optimize their employment opportunities. This will take basic equipment and professional resources.

The Commission has skilled staff to help the individual reach a vocational objective. We offer a wide range of services including medical examinations, opthamological examinations, audiological and other diagnostic services. These services are coordinated by the Commission and made available to blind persons.

Vocational training is another primary ingredient in the whole process and involves an Individualized Written Rehabilitation Plan (IWRP) for each client. Vocational training can take the form of on-the-job training, formal college or university training, provision of books, supplies, special adapted equipment or devices, purchase of tools, licenses, and other aids to help the client access training and employment. Placement services are provided on a case-by-case basis. Cases do not close until the individual has been on the job and functioning satisfactorily for at least 60 days.

The Commission is not only concerned and involved with vocational rehabilitation, but is also very concerned with independent rehabilitation services. We are currently developing a program of comprehensive services for independent living. It is designed to meet the present and future needs of individuals whose disabilities are so severe, for other substantial reasons, that they do not presently have the potential to pursue employment. However, they may benefit from rehabilitation services which might enable them to live and function independently.

1978 Amendments to the Rehabilitation Act, P.L. 95-602, established Title VII programs to undertake initiatives in these areas. The authority has not been matched, however, by appropriations of money to carry out the intent and spirit of the law.

Presently, the Commission for the Blind, as most governmental agencies, is experiencing some fiscal hardship. A recent presentation by the Commission to the Subcommittee on Select Education advised the Committee of the high cost of rehabilitation. This is a result of the inflationary spiral that has entrapped educators as well as rehabilitation personnel in their services to the blind. The funding to date has been extremely limited. The Michigan Commission for the Blind, however, has submitted a grant request to begin the development of a program in this area under Part D, Title VII. This $200,000 grant would consist of a demonstration pilot project for an independent living center without walls. The project would help blind persons access appropriate personnel and resources. The proposed location is in the Gaylord area with primary focus on the rural population. A Lansing location would also be used.

At the present time, the Commission is operating a pilot project in the Saginaw-Bay area with a target population of individuals 55 years and over. This is the first year of the two-year project. This project has been well received. Since almost half of all blind individuals are 65 years and older, there is no doubt that there is a need for rehabilitation assistance for this age group.

The Commission has a very strong interest in blind and visually handicapped children, and properly so in light of the fact that legislation that established the Department of Education at the federal level placed the former Rehabilitation Services Administration (RSA) under the direction of the Special Education and Rehabilitation Services Office. P.A. 206, which established the Commission, demonstrates a strong intent in this particular age group.

The challenges now and in the future for Special Education, Vocational Education, and Rehabilitation are tremendous. Each disabled child must have available to him or her, beginning at the pre-school level, opportunities for an appropriate educational environment and an appropriate educational program which meets his/her needs in the least restrictive environment. These agencies must assure that the special needs of all blind and visually handicapped or multiply disabled children are met. These same children are likely to be referrals to the Commission's rehabilitation programs in the future. Therefore, there is a need to effect provision of educational programming and planning that provides for social adjustment services, teaching of communication skills, Braille, typing, and orientation and traveling skills so these children can maximize their potential.

The research and technology in the area of blindness has focused largely upon communication and mobility. Reading machines and other communication equipment have greatly improved in the past decade. If costs can be lowered, these items hold promise for many of our mutual clients.

In conclusion, the Commission for the Blind, in the days and years ahead, will be moving forward in many areas. We will move aggressively forward together in partnership for the provision of education and rehabilitation services for the blind and visually impaired.

PAM ASSISTANCE CENTRE

Arselia Ensign, Executive Director

Physically Impaired Association of Michigan

The Physically Impaired Association of Michigan (PAM) the parent organization of the PAM Assistance Centre, was first begun as a vehicle to help combat some of the frustrations of parents of the physically handicapped. But, from its conception in the fall of 1973, the idea was not to offer just an organization for parents of varied disability areas in order that they might advocate for their needs. There was a great feeling that parents needed everyone else concerned to be in this with them, such as school people, health and social agency folks, legislators, and producers of aids and equipment. The participation of adult handicappers came to be particularly valued.

Today, the Centre is dedicated to carrying out the purposes of the parent organization. The particular focus is handicapper aids.

Origin and Utilization of the Centre

The PAM Assistance Centre initiated services in 1979 formally after Open House activities in August. As of April 1, 1980, 1035 visitors have toured the Centre seeking information or a solution to an equipment-related problem.

The Centre is modeled after one facet of the Spastics Society Family and Assessment Centre in London. It is a first for Michigan and, in many respects, a first for the nation.

Rationale and Purpose of the Assistance Centre

Why has the Assistance Centre chosen to focus upon aids? Because some problems do have answers - tangible, possible solutions.

> "We may have good laws and even well-intentioned implementation, we may have psychologically strong children and adults, but we still may not have happy, fulfilled persons. If communication needs exist, if access to educational technology is limited or lacking, if mobility problems are formidable, and if many practical aspects of self-help are unexplored, there are great voids. But these are voids that CAN BE ADDRESSED. They are the business of the Centre."

The Centre's primary function is to make available educational and technical information which addresses the daily living, educational, vocational, and recreational needs of handicapped persons.

More specifically, the Centre provides assistance in the following areas:

- answering questions in regard to aids for daily living, education, vocation, and recreation
- demonstration of equipment.
- location of funding sources for equipment
- serving as liaison between clients and agencies
- providing inservice training for educators, health personnel, and rehabilitation workers
- informing suppliers and manufacturers of the current needs of handicappers

As one on-going activity, PAM staff attempt to improve their understanding of needs through systematic feedback from school administrators, teachers, therapists, other direct-service providers, and persons having disabilities.

Other Activities

The Centre devotes a good portion of its time to awareness activities which are designed to reach diverse user populations. The objectives of these activities is to explain Centre services to any individual who may benefit from having more knowledge about educational, vocational, recreational, and daily-living equipment and aids. The prominent users of this information have been identified and include school personnel (teachers, administrators, therapists, etc.), individuals having disabilities, nurses, rehabilitation counselors, agency representatives, parents and advocates, and community organizations.

From September, 1979 - March, 1980, the Centre has conducted 41 in-service presentations. reaching approximately 1000 persons. A majority of these presentations have been conducted onsite.

For the Blind and Partially Seeing

Even in the early days of PAM as an organization, visually impaired persons were an important concern of its founders. With the birth of the Centre came its first pieces of equipment, all from the American Printing House for the Blind - talking calculator, light sensor, other education and mobility aids. Here, then, is a place, centrally located, where A.P.H. equipment can be examined before ordering, either through the Michigan School for the Blind, Michigan Department of Education quota procedures, or independently. Many persons have had their first look at the A.P.H. Sensory Stimulation Kit at the Centre display.

Coordination with many state and community agencies, as well as with schools and university programs, is vital to Centre effectiveness. It has been particularly helpful for the Centre to act as liasison with the Lansing Center for Handicapper Affairs, the State Library for the Blind and Physically Handicapped, the Commission for the Blind, and the Mid-Michigan Center for the Blind. Mid-Michigan Center for the Blind offers the expertise of a trained staff and also has a variety of aids for sale. The Michigan School for the Blind, with its newly implemented Media Center, provides other kindred resources.

STRESS

Leonard Lee Brooks, Director
Interdisciplinary Team Services
Michigan School for the Blind

INTRODUCTION

Dr. Lee Brooks was our dinner speaker for the 1980 Institute for Public School Personnel Serving Visually Impaired Persons. He provided the Institute participants with food for thought and many chuckles, giggles, and belly laughs as he expounded on the virtues and deleterious effects of stress (or "burn-out") on teaching professionals. The high quality of Dr. Brook's monologue was certainly on par with our elegant surroundings, efficient service, and exquisite meal in the "Upper Room" of Jim's Tiffany Place. The following is a brief summary of Dr. Brook's presentation.

STRESS CAN BE GOOD FOR YOU!

Dr. Hans Selye, M.D., is a well-known researcher in the field of stress. Dr. Selye conducts his research at the International Institute of Stress Research at the University of Montreal in Canada. Dr. Selye states that, "The most important thing discovered about stress is that stress is a good thing - even necessary for our well being."

There are different kinds of stress. For example, there is the body's response to sitting in a dentist's chair. And, there is the response to a lover's kiss. While both of these situations may create stress in the human being, the body's response to each is unique. One secret to living life to the fullest is to learn our unique response to different kinds of stress and to adjust ourselves accordingly.

What do you do when you find that stress has reached unbearably high levels? The traditional approach to excessive stress is to take tranquilizers or to drink booze. There are always new medications coming on the market that guarantee sleep and peace of mind. Some may use other drugs. These traditional approaches to alleviate stress provide only temporary results. Negative side effects are often present with the use of such methods.

There are better approaches to alleviating stress. Some of these include transcendental meditation, swimming, cycling, calisthenics, jogging, walking, etc.

However, too much of a good thing can *create* stress. For example, there is a hierarchy among runners. Runners look down upon joggers; joggers are forever pressing themselves to jog farther and faster. Often, the original goal - to relax and reduce stress - is forgotten. The runner and the jogger may no longer enjoy the activity for the release it orignally offered from the pressures created by our anxiety-producing, societal structure. When only one person in a family jogs or runs, he or she begins to get physically fit and becomes overly critical of the spouse and his/her sedentary life style. This may create friction in the marriage and has been known to result in divorce.

So - walking is highly recommended. Walking is an exercise that is good for you. Brisk walking increases the circulation and improves physical fitness. Husbands and wives - and kids - can walk together in the evenings. I've never known two people to get a divorce over walking. It brings couples closer together!

A second secret to living life to the fullest is to maintain a positive attitude. It is truly the rare individual who loves his work and is fortunate enough to be paid for it. But every worker can develop a more positive attitude by developing a more favorable view of work. Most of us must work to survive. We have only a limited capacity to resist stress. Don't waste it on pointless anger and rage. We should be thankful that we have a job to do. With the economy as it is, and Michigan has been hit very hard in this economic decline, there are men who would give their right arms to have a job to do - to be employed. Of all the stressful situations we could discuss, it is my opinion that the stress created by unemployment must be most detrimental and destructive to the self-concept.

A third secret to living life to the fullest is to set goals. Lack of goals can cause stress. This is particularly notable today in our youth as evidenced by senseless violence, alcoholism, drug abuse, crime, and suicides.

In summary, a person should seek his own stress level. Are you a *race horse* or a *turtle*? You can decide on the amount of stress you can manage. Some folks seek out stress and thrive on it!

Make sure you are not trying to live out the goals set by others rather than those set by you!

Most important - seek to improve yourself. Look out for yourself by being necessary to others. This will guarantee a meaningful, vibrant old age. Improve your competence. Avoid, most of all, modern-day stress created by *purposelessness*.

In conclusion, your conscious, active, effort for self-improvement is your greatest protection from "burn-out" and a major key to "the good life!"

CLOSING

The following statements are designed to relieve some of your common strains and stresses. We hope they will bring laughter - at least a chuckle - into your life. (We would even settle for a smile!)

MURPHY's FUNDAMENTAL LAWS

1. If anything can go wrong, invariably it will.
2. Nothing is ever as simple as it first seems.
3. Everything you decide to do costs more than first estimated.
4. Every activity takes more time than you have.
5. By trying to please everybody, somebody will be displeased.
6. It is a fundamental law of nature that nothing ever quite works out.
7. It is easier to make a commitment or to get involved in something than to get out of it.
8. Whatever you set out to do, something else must be done first.
9. If you improve or tinker with something long enough, eventually it will break or misfunction.
10. By making something absolutely clear, someone will become confused.
11. Every clarification breeds new questions.
12. You can fool some of the people all of the time and all of the people some of the time, and that is sufficient.
13. Persons disagreeing with your facts are always emotional and employ faulty reasoning.
14. Enough research will tend to support your conclusions.
15. The greater the importance of decisions to be made, the larger must be the committee assigned to make them.
16. The more urgent the need for decision, the less apparent becomes the identity of the decision-maker.
17. The more complex the idea or technology, the more simple-minded is the opposition.
18. Each profession talks to itself in its own unique language. Apparently, there is no Rosetta Stone.

UNNATURAL LAWS

MURPHY'S LAW
If anything can go wrong, it will.

O'TOOL'S COMMENTARY ON MURPHY'S LAW
Murphy was an optimist.

THE UNSPEAKABLE LAW
As soon as you mention something...if it's good, it goes away;
if it's bad, it happens.

HOWE'S LAW
Every man has a scheme that will not work.

ETORRE'S OBSERVATION
The other line moves faster.

LAW OF SELECTIVE GRAVITY
An object will fall so as to do the most damage.

JENNING'S COROLLARY
The chance of the bread falling with the buttered side down
is directly proportional to the cost of the carpet.

GORDON'S FIRST LAW
If a research project is not worth doing at all,
it is not worth doing well.

BOREN'S FIRST LAW
When in doubt, mumble.

THE GOLDEN RULE OF ARTS AND SCIENCES
Whoever has the gold makes the rules.

BARTH'S DISTINCTION
There are two types of people: those who divide people into
two types, and those who don't.

SEGAL'S LAW
A man with one watch knows what time it is.
A man with two watches is never sure.*

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PLANNING THE PERFECT PROFESSIONAL DEVELOPMENT PROGRAM

Phil Vedovatti, Vision Coordinator[1]
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Mr. Phil Vedovatti is the Vision Coordinator for the Illinois Department of Public Instruction. Mr. Vedovatti conducted an audience participation session. The purpose of this presentation was to brainstorm and do some planning future professional inservice activities. The session resulted in the development of several lists which provided answers to the key questions - Who? What? When? Where? Why? - as they relate to the planning of professional development activities for professionals serving visually impaired students.

The following is a summary of the planning activities suggested by the participants of the 1980 Institute for Public School Personnel Serving Visually Impaired Students. Mr. Vedovatti encouraged the audience to *dream* - to plan the perfect inservice - to assume that unlimited funding was available!

WHO SHOULD PLAN THE PROGRAM?

Representation from a broad spectrum in the field of vision and related programs and services should be involved in the planning process. The planning committee should include the following:

Teachers (V.I., T.M.I., S.M.I, S.X.I., etc.)
Teacher Consultants
Administrators
Regular Classroom Teachers with Mainstreamed V.I. Students
Orientation and Mobility Specialists
Agency Representatives (child and adult)
Vocational Educators
Librarians
Learning Disabilities Specialists
Parents
Occupational Therapists
Physical Therapists
Doctors

WHAT WILL BE PRESENTED AT THE CONFERENCE?

A needs assessment (formal or informal) should be conducted. The planning committee will need to construct a formal needs assessment.[2] [3] The needs assessment should be mailed to the target audience and potential participants.

During the needs assessment, suggestions for speakers and presenters can also be generated. The planning committee should contact potential presenters as early as possible. This will enable planners to get the best speakers. Good speakers commit themselves as much as a year in advance. Presenters should be contacted again a few days prior to the conference to confirm all arrangements and details.

The planning committee will need to decide whether it wants to have a theme (e.g., electronic aids, multi-handicapped, pre-schoolers, vocational education, etc.)

[1] Mr. Vedovatti's presentation was sponsored by the Council for Exceptional Children - Division for the Visually Handicapped.

[2] Joan Moore, O.T., of South Dakota has developed a needs assessment for multiply handicapped students.

[3] University of Wisconsin Experimental Unit, North Harring, Seattle, Washington, has developed a 4-volume set for the teacher of the visually impaired who was not trained to serve the multiply handicapped. Cost: $25.00. Title: *Inservice Programming for Working with Multi-Handicapped.*

Next, consideration must be given to the format of the conference. The following are some alternatives and suggestions:

Lecture/Demonstration
Exhibits
"Show and Tell" (One-way Communication)
Idea Exchange (Two-way Communication)
Concurrent Sessions
Small Group Discussions
Participation
"Make-and-Take"
Simulation
Materials/Tools Development

The latter suggestions in the list require good group facilitators. When the audience is physically involved in the program, special consideration must be given to the size of the group. When a change of attire is necessary, notation should appear in the initial workshop announcement.

How long should the workshop last? The length of the program will be determined primarily by the purpose of the workshop. Also, the nature of the audience will influence program duration. If the purpose of the workshop is to provide an introduction for beginning teachers - regular classroom teachers, teachers of the visually impaired or other special education teachers, aides, therapists, etc. - a few, short, overview sessions may be most appropriate (45 - 55 minutes). On the other hand, an in-depth program for skill acquisition may require a 2-hour, ½-day, full day, or 2-day workshop. Breaks should be scheduled to minimize fatique and to maximize maintenance of interest and attention of the audience. Planners may wish to offer a variety of lengths and skill-training levels within a conference. And, there should be something available for the beginner as well as the veteran professional.

Recording presentations may offer an opportunity for persons to benefit from more conference sessions. Cassettes may be made available at listening stations during the conference. Or, they may become part of a library collection. The latter alternative would afford the opportunity for persons not in attendance to benefit from the conference proceedings.

Evalutation to find out if the conference met the needs of the participants is important for several reasons. It can assist the planners in improving future programs, and it helps to establish a record of credibility with funding sources.

WHEN SHOULD THE CONFERENCE BE SCHEDULED?

The following is a list of considerations for scheduling conferences:

- Weekends - Good because schools don't need to pay substitute teachers; dedicated people will come.
- Middle of the year (February - March) - Special consideration must be given to the possibility of bad weather.
- Concurrently with another meeting/conference - One request for release time would be adequate for attendance at both programs.
- Sequence of programs - This would provide an opportunity for more in-depth training with intermittent practice with students at the home school.

WHERE WILL THE CONFERENCE BE HELD?

The location of the conference can vary with the availability of funds. Special attention may need to be given to facilities for sessions requiring construction and/or physical activities.

WHAT FUNDING SOURCES ARE AVAILABLE?

There are many sources of funds which can be tapped. Some of these include the following: (1) Michigan Department of Education - Special Education Services Area, (2) intermediate and local school districts, (3) policy boards, and (4) conference fees.

A committee to explore funding sources may be created. Additional resources may be found. For example, projects in the dissemination phase can be invited to present. Many projects will welcome the opportunity to share information regarding their project. This service is often available free of charge. Teacher enrichment centers sometimes have a requirement to sponsor inservice programs. Further, some organizations and institutions, such as

[4] California used this method: Ideas were solicited. Teachers responded in writing. These ideas were disseminated at the workshop. Teachers who attended the conference had the opportunity to demonstrate their ideas. Then, they solicited ideas from the audience. Participants left the conference with a packet of ideas.

the Division for the Visually Handicapped (D.V.H.) of the Council for Exceptional Children and the American Printing House (A.P.H.), have people resources that can be tapped. Also, it may be possible to acquire the services of a noted person who will be visiting a university in the area. Meetings may be planned around his/her visit. Thus, transportation expenses are avoided.

WHY IS THERE A NEED FOR AN ORGANIZATION?

There is no simple answer to this question. Only people, here in Michigan, can answer this question. An organization can provide a communication network. It can publish a newsletter. It can provide a vehicle for initiating the necessary political action to generate programs and services for low incidence handicapped groups. An organization can give you the necessary identity to be a positive force for change. Someone must look after the interests of the visually impaired population. Otherwise, because they are so few in number, they are going to get the short end of the stick!

The choice in this matter is really up to *you!*

APPENDIX A

EVALUATIONS

IN-SERVICE EVALUATION REPORT

1980 Institute for Public School Personnel Serving Visually Impaired Students

The evaluation of the 1980 Institute for Public School Personnel Serving Visually Impaired Students was completed by sixty-seven (67) of one hundred eight (108) persons in attendance. A factor which contributed to the low response (52%) may have been the insufficient time allotted during the program for the completion of the several surveys and questionnaires.

The Institute evaluation survey required participants to rate each presentation on a 5-point scale: "1" meaning "extremely valuable"; "5" meaning "of no value." Participants also evaluated other aspects of the Institute in a similar manner. Next, participants were asked to indicate materials and/or resources that they would make use of in the future.

Overall, participants of the 1980 Institute for Public School Personnel Serving Visually Impaired Students seemed to feel that the program was worthwhile and beneficial. They indicated that nearly half (48.89%) of the information presented was new. Other aspects of the program were rated as follows:

	RATING
The program agenda was organized effectively.	1.93
Overall, the program was beneficial.	1.98
The information presented met my needs.	2.04
The information presented will be of practical use.	2.18

Participants indicated that they intended to make extensive use of many of the materials and resources presented during the Institute program. The following is a summary of projected use of these materials and resources:

MATERIAL/RESOURCE	NUMBER OF USERS	PERCENT OF RESPONDENTS
Media Center	50	74.6%
New Braille Reading Series	33	49.3%
PAM Assistance Centre	30	44.8%
Commission for the Blind	21	31.3%
MAVIS	20	29.9%
SAVI	14	20.9%
LRE Filmstrip	12	17.9%
MSB Film	3	4.5%

Finally, participants of the Institute were asked to provide information concerning (1) things they liked best about the program, (2) ways to improve the program, and (3) suggestions for future inservice programs. Participants indicated most frequently that the opportunity to meet and exchange ideas with other educators of the visually impaired was a valued experience. This opportunity for exchange and interaction was also suggested by many for future inservice programs as well. Another trend in the responses was the positive feedback regarding the presentations on materials. The participants felt that the Institute provided them with needed information on available programs, services, and materials. Suggestions for improvement of the Institute centered around a need for shorter presentations that included hand-outs as well as more "hands-on" activities. Also, for future inservices, participants desired small topical discussion groups.

1980 PRIORITIES FOR PUBLIC SCHOOL PERSONNEL SERVING VISUALLY IMPAIRED PERSONS IN MICHIGAN

The 1980 Institute for Public School Personnel Serving Visually Impaired Students was sponsored by the Michigan Department of Education - Special Education Service Area. Fifty-four (54) participants of the Institute completed a survey entitled, "Priorities: Personnel Serving Visually Impaired Persons." Respondents listed 20 identified concerns according to their priorities: 1 = highest priority, 20 = lowest priority. Respondents were also requested to check (✓) sub-components in the areas of concern.

SURVEY FINDINGS AND RESULTS

The following is a summary of the responses to the survey. Identified areas of concern are listed in descending order of priority in Table I.

TABLE I

Priorities for Public School Personnel Serving Visually Impaired Persons in Michigan

Rank	Mean	
1	4.1	Diagnosis/Evaluation/Assessment
2.	5.5	Preschool Programs and Service for Visually Impaired Infants
3.	6.3	Consultation Skills
4	6.5	Least Restrictive Environment/Mainstreaming
5	6.6	Personal Adjustment Skill Training
6	8.2	Vocational Training and Placement for Visually Impaired Students
6	8.2	Orientation and Mobility
7	9.0	Pre-Vocational Training
7	9.0	Physical Education/Recreation/Leisure Skills
8	9.5	Statewide Professional Organization
9	9.7	Braille
10	10.4	Media Center
11	11.0	Interagency Communication and Cooperation
12	11.5	Directory of Personnel Serving Visually Impaired Students (Including listing of special competencies)
13	12.0	Newly Blind Persons
14	12.9	Sexuality Education
15	13.2	Needed Research
16	14.2	Optacon Training
17	14.4	Role of Michigan School for the Blind
18	16.5	Decline of Visually Impaired Student Count

Table II summarizes responses to the subtopics within the 20 major identified areas of concern.[1]

[1] Identified concerns which did not include any subtopics have been omitted from this listing.

TABLE II

Summary of Priority Subtopics

Rank	Mean	Concern Area	Number of Responses
1	4.1	Diagnosis/Evaluation/Assessment	
		Non-Academic	26
		For Use of Low Vision Aids	10
		Instructional/Assessment	16
		Interpretation of Medical Reports	15
		Writing the IEP	12
3	6.3	Consultation Skills	
		Parent Counseling	24
		Changing Attitudes of the Non-handicapped	18
		Parent Groups	12
4	6.5	Least Restrictive Environment/Mainstreaming	
		Preschool	31
		School Ages	21
		Young Adult	11
5	6.6	Personal Adjustment Skill Training	
		Social Skills	24
		Work Readiness	14
		Attitude Modification	14
6	8.2	*Vocational Training and Placement for Visually Impaired Students	
		Severely Visually Impaired	17
		Multiply Impaired and Deaf-Blind	12
6	8.2	*Orientation and Mobility	
		Evaluation	20
		Instruction	18
7	9.0	*Pre-Vocational Training	
		Consumer Home Economic	13
		Industrial Arts	7
8	9.5	Statewide Professional Organization	
		Communication Network	26
		Peer Consultation	18
		Development	11
9	9.7	Braille	
		Beginning Braille Skills	18
		Refreshing	9
13	12.0	Newly Blind Persons	
		Upper Elementary	13
		Secondary	7
		Post-Secondary	1

SUMMARY AND CONCLUSIONS

The areas of "Diagnosis/Evaluation/Assessment" was the highest priority for the respondents. The subtopic concerns under Diagnosis/Evaluation/Assessment also received a high number of responses.

"Consultation Skills" was the third priority. As a subtopic concern, Parent Counseling seemed of particularly high interest to the respondents (n = 24).

"Least Restrictive Environment/Mainstreaming" ranked as the fourth priority. The least restrictive alternative for pre-school children received a large number of responses (n = 31; 57.41%). Placement of school-aged students was also of notable concern (n = 21).

While ranking 8th among identified priorities, a "Statewide Professional Organization" received a large number of responses on the "Communication Network" subtopic (n = 26; 48.15%). Although the overall ranking of the major concern was not particularly high, the response to the subtopic area is noteworthy.

In final, twenty-four (24) Institute participants indicated a desire to work toward resolution of problems related to these identified priorities.

* 1980 Inservice program included these topics.

APPENDIX B

PRESENTERS and PARTICIPANTS

Institute for Public School Personnel
Serving Visually Impaired Students

DIRECTORY AND RESUMÉS OF PRESENTERS

DR. LEONARD LEE BROOKS, DIRECTOR

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Dr. Leonard Brooks is presently the Director of Interdisciplinary Team Services at the Michigan School for the Blind. Lee completed his B.S. in Psychology in 1950 at Florida State University. He continued his studies at Columbia University Teachers College and received his Master's degree in 1951. His first teaching position was at Admiral Farragut Military Academy as a middle school social studies teacher. For two years, he worked as a psychologist and group worker in Pleasantville, New York. While completing his doctorate at the University of Denver, Lee served as audiologist and speech correctionist for the Denver Public Schools. Subsequently, Lee served as a Speech Consultant, Assistant Personnel Director, Program Planning Consultant, and Evaluation and Information Field Representative for the Colorado Department of Education.

Dr. Brooks relocated to Michigan in 1975 to accept a position at the Michigan School for the Blind. He is responsible for the coordination and development of diagnostic and prescriptive services for visually impaired students.

DR. NANCY BRYANT, SUPERINTENDENT

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Dr. Nancy Bryant is the Superintendent of the Michigan School for the Blind. Nancy began her training in Special Education at Florida State University, and completed her Master's degree in Special Education for the Handicapped at George Peabody College for Teachers in Nashville, Tennessee in 1960. She completed her doctorate degree at George Peabody College (1969).

Dr. Bryant has served as a teacher of visually impaired students. She has also trained teachers at Fisk University in Nashville, Tennessee and at Wisconsin State University. Her professional experiences have also included work as a guidance counselor, psychologist, and educational consultant. She has also served as Program Director at the Plymouth Center for Human Development in Northville, Michigan. Over the years, Nancy has established herself as an outstanding lecturer and has written extensively in the field of visual handicaps and blindness.

DR. HILDA CATON, RESEARCH SCIENTIST

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Hilda R. Caton is Assistant Professor at the University of Louisville, Department of Special Education. Originally trained in the area of music at Florida State University (1965), Dr. Caton taught elementary grades 3-6 in the state of Kansas. In 1965, Hilda received her Master's degree in Visually Handicapped from George Peabody College for Teachers in Nashville, Tennessee. She served as an Itinerant and Resource Teacher of Blind and Partially Seeing Children from 1963-1968. She began serving as a consultant to the Kentucky Department of Education, Division of

Special Education while completing her Specialist degree at Peabody College. In 1968, Hilda served as a research intern for the Department of Education Research, American Printing House for the Blind. This experience helped to reunite Dr. Caton with the American Printing House for the Blind (APH) as a Materials Development and Evaluation Specialist in 1970. Dr. Caton continues to serve in this capacity for APH and as a researcher. In 1976, Dr. Caton began teaching with the Department of Special Education of the University of Louisville where she contiues at the present time.

DR. ARSELIA ENSIGN, EXECUTIVE DIRECTOR

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Dr. Arselia Ensign is the creator and Executive Director of the PAM Assistance Centre in Lansing, Michigan. Arselia, after completing her B.S. degree at the University of Illinois, began her professional career in 1941 as a high school English teacher for the Indianola Community Schools, Indianola, Illinois. She completed her Master's degree in Special Education at Michigan State University in 1943. Subsequently, she taught physically handicapped students for eight years in Lansing, Michigan. Arselia continued her work with handicapped students at the Eastern Orthopedic School in Grand Rapids for ten more years before joining the Michigan Department of Education, Special Education Service Area as Consultant and Coordinator of Training. Arselia served in this role for over a decade before she created the PAM Assistance Centre in the spring of 1979. Dr. Ensign is enjoying an active "retirement" as the Executive Director of the Centre.

ALICIA GREEN, DIRECTOR

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Alicia is the Director of the Media Center for the Visually Impaired.

Alicia was born and raised in Chile. She completed her Bachelor degree in Education at the University of Chile, her Master's in Library Science at the University of Michigan. Ms. Green has also pursued her interests in data processing at Michigan State University and Lansing Community College.

Alicia has had a varied professional career. She has been an elementary teacher in Chile, a teacher of French in Saudi Arabia, a Library Director, a college instructor, the Chairperson of the School of Library Science at the University of Chile. Alicia was the grant administrator of a grant with the Inter-American Bank for Development and coordinated collection development. She was also an original cataloguer for Michigan State University Library.

DONNA HEINER, VICE PRESIDENT

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1975 Rutgers
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Donna E. Heiner is a consultant for the International Institute for Visually Impaired, Birth to 7, Inc., and editor of the "V.I.P. Newsletter." Ms. Heiner graduated from Michigan State University in 1965 with a B.S. in English and taught English at the junior high school level for two years. After returning to MSU to complete her Master's in Education for the Visually Handicapped, Donna began teaching at the Michigan School for the Blind in 1969. Shortly thereafter, Ms. Heiner completed her Specialist degree at MSU in Special Education. With an interest in early childhood education, Donna became the Administrator for the Children's Community Nursery and a substitute teacher for the Infant

Program for Visually Impaired. Ms. Heiner was involved in the development of Project Outreach - Infant Program for Visually Impaired in 1977. She later assisted in the incorporation of the International Institute in order that the work of Project Outreach could continue after the loss for federal funding to the project.

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Jerome J. Jackson (better known as "J.J.) is presently a Systems Analyst/Consultant for, the Artificial Language Laboratory in the Computer Science Department at MSU. He is also a representative for Telesensory Systems, Inc., of Palo Alto, California. Mr. Jackson is highly trained in the use of the Optacon. He evaluates visually impaired persons who are potential users of the Optacon and provides consultation and in-service programs for personnel working with blind persons. J.J. graduated as Valedictorian from the Michigan School for the Blind in 1968. He completed his undergraduate studies at Michigan State University in 1973. J.J. is a member of the Citizen's Advisory Board for the Michigan School for the Blind and a member of the Board of Directors of Handicapped Advocacy Alliance.

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Dr. Deborah Livingston-White joined the Michigan Department of Education, Special Education Service Area, in 1978. She provides consultation and technical assistance in the areas of Specific Learning Disabilities and Visual Impairments. Deborah completed her BS in the area of Educable Mentally Handicapped at Southern Illinois University in 1968. Her first teaching assignment was in a secondary EMI program in Murphysboro, Illinois. She continued her education at Southern Illinois University in the area of Elementary Education - Curriculum and Instruction and received her Master's degree in 1971. From 1972 to 1976, Deborah completed her certification in Learning Disabilities and had various teaching experiences including regular and transition fourth grade classrooms, eighth grade Language Arts, and Itinerate Learning Disabilites teacher (K-12), emotionally impaired and visually impaired students.

As a graduate assistant completing her doctorate degree at Northern Illinois University, Deborah was an Instructor and Supervisor of student teachers in Chicago, Illinois. She has also taught at Mundeltin College in Evanston. Upon her relocation to Michigan, Dr. Livingston-White served as a Special Education Teacher Consultant for the Dansville Agriculture Schools, Dansville, Michigan (1976-1978). She served as a co-director of the 1980 Institute for Personnel Serving Visually Impaired Students.

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Dr. Iain Macleod, visiting Associate Professor with the Computer Science Department of Michigan State University, is a native of Australia. Dr. Macleod graduated from the University of New South Wales in 1965. After graduation, he continued to work as a design engineer for Duron Condeste Ltd. until April of 1966. Iain completed his doctoral studies at the Australian National University (ANU) in 1970. He is continuing his work for ANU as a Research Fellow in the Department of Engineering Physics, developing computer applications in the areas of perceptual processing and image processing. Dr. Macleod has been a visiting Research Associate Professor at both the University of Maryland (1972) and Michigan State University.

Dr. Macleod's special interests lie in the areas of communication enhancement and the application of computer technology to the teaching of various skills to intellectually handicapped students and severely physically handicapped persons.

Dr. Macleod has been one of three scientists who developed a digitizer "pen" for computer-based handwriting training for the blind. He has published extensively in the area of computer technology and holds patents on a "digitizing device" (in both U.S.A. and Australia) and a heart-beat monitor (Provisional Australian Patent).

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Julie Nicol is the Director of the Library for the Blind and Physically Handicapped Media Center located on the Michigan School for the Blind campus. Ms. Nicol graduated with her B.A. in Art from Western Illinois University in 1968. She completed her Master's degree in Library Science from Western Michigan University (1972) while working for the Library for the Blind and Physically Handicapped. Ms. Nicol has attended Michigan State University for additional course work in the areas of administration, advertising, and communications. Julie has a special interest in the Arts with and for the handicapped. She has pursued this interest by working on Michigan's "Very Special Arts Festival" in 1979 and 1980.

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Jeanne has been Librarian at the Michigan School for the Blind since 1951. She completed her undergraduate studies at Central Michigan University and her Master's in Library Science at the University of Michigan. Prior to joining the staff at MSB, she served in a similar capacity at the Michigan School for the Deaf. Ms. Orszag is certified to teach both deaf and blind students.

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Philip Peterson is Director of the Commission for the Blind. Mr. Peterson's past professional experiences include being a Case Supervisor at the Mott Foundation Program of the Flint Board of Education. He also served as the Executive Director of the Office of Economic Opportunities Programs in Flint. Mr. Peterson has eighteen years of experience in the area of rehabilitation. He has served as Vocational Rehabilitation Supervisor and Assistant Area Administrator for the Michigan Department of Education during his tenure. He left this latter post to assume the Directorship of the Commission for the Blind.

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Carol J. Rottman is a consultant for the International Institute for Visually Impaired, Birth to 7, Inc. Ms. Rottman completed her Elementary Education degree in 1960 at Calvin College and the University of Michigan. Carol taught first grade for a year, was a teacher in several early education centers, and later served as a director of one of the centers. She completed her Master's degree for Mentally Impaired at Michigan State University in 1980. She continued her studies in the areas of Special Education and Early Childhood Education at Michigan State while working with visually impaired infants. Carol was one of the developers of Project Outreach - Infant Program for Visually Impaired. Ms. Rottman currently consults for the International Institute for Visually Impaired, Birth to 7, Inc., which is a private corporation which continues the work of Project Outreach. Ms. Rottman also is an instructor for Calvin College at this time.

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Dr. Geraldine Scholl is presently Assistant Professor at the University of Michigan in the Department of Special Education. After graduting from Marygrove College in 1942 as a Music major, she attended Perkins Harvard Course for Teachers of the Blind. She subsequently taught visually impaired children in Grand Rapids, Michigan. In 1947, Geraldine became the principal for the Michigan School for the Blind. After ten years in that position, she taught emotionally impaired students briefly at the Hawthorn Center and then became a teaching fellow.

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Julie Todd is the Coordinator of the Ohio Resource Center for the Visually Handicapped in Columbus, Ohio. Ms. Todd majored in German at Miami University in Ohio. Her first teaching position was as a teacher of the Educable Mentally Impaired in a junior high school in Columbus, Ohio from 1970-1975. In 1973, Ms. Todd completed her Master's degree in the area of Educable Mental Retardation at Ohio State University. Next, Julie became a consultant for the Area Learning Resource Center Project. Since 1977, Ms. Todd has served as Coordinator of the Ohio Resource Center for the Visually Impaired, a Title VI-B statewide project. Julie also serves as the Coordinator of In-Service and Information Component of Ohio's Deaf-Blind Project.

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MICHIGAN STATE BOARD OF EDUCATION

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